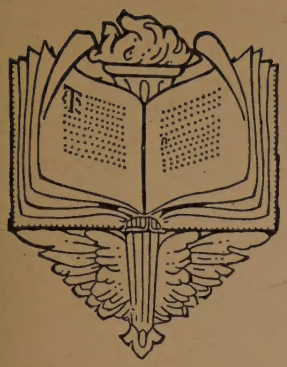
THE BOOK OF KNOWLEDGE



DEPARTMENTS

The Earth

Stories and Legends

All Countries

Golden Deeds

Book of Wonder

Literature

Animal Life

Famous Books

Dominion of Canada

The United States

Familiar Things

Our Own Life

The Fine Arts

Men and Women

Poetry and Rhymes

Plant Life

Things to Make

and Things to Do

The BOOK *of* KNOWLEDGE

The Children's Encyclopedia

EDITORS-IN-CHIEF

HOLLAND THOMPSON, Ph.D.
The College of the City of New York

ARTHUR MEE
Temple Chambers, London

WITH AN INTRODUCTION BY

JOHN H. FINLEY, LL.D.
Late President of the College of the City of New York
and Commissioner of Education State of New York

VOLUME XIV

THE GROLIER SOCIETY

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CONTENTS OF THIS VOLUME

This is a short guide to the principal contents of this volume. It is not possible to give all of the questions in The Book of Wonder, or the titles of all of the Little Verses and Problems, but in all cases the pages are given where such sections of the book begin. In the big Index, Volume 20, you will find every title and every subject, including the pictures.

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Photo, H. J. Harvey.

Jackson Square, or Place d'Armes, the old French quarters of New Orleans, dating from 1795.

THE SOUTHERN STATES

PART II

IN the early days there was considerable manufacturing in the South, but the invention of the cotton gin led people to think that there was more profit in agriculture. So the number of factories did not increase so rapidly as in the North. Since the Civil War there has been a great change, and now the value of manufactures is greater than the value of the crops. But agriculture is still of surpassing importance in the South, as may be clearly seen from the fact that only about a third of the people of the South live in cities.

Now let us see what advantages the South has for manufacturing. In the first place, it produces the raw materials for many kinds of manufacturing; next, the Southern people have been successful as workers in factories; and, third, it has power for manufacturing. On the other hand, it has few great cities, and is not so convenient to the principal markets of the world as some other sections.

We have already spoken of the coal resources of the South. Besides coal, the South has water power. At the inner edge of the Coastal Plain, from the Great Falls of the Potomac to Muscle Shoals there are rapids and falls on nearly every river. The energy in these rapids and falls is made into electricity. Like the refining of petroleum, this process is a manufacturing industry in itself. The electricity then supplies power for other industries. Storage reservoirs for the water, and an interconnecting system for the electricity (a Super Power System, as in the Northeastern section) make this power available throughout the year. One of the greatest companies, the Alabama Power Company, serves three hundred industries and supplies a million people with electricity. The greatest power site in the South, second only to Niagara Falls, is Muscle Shoals, where the great Wilson Dam has been built. This has now become the centre of a great government development project which includes the entire Tennessee Valley.

The most important manufacturing industry to-day is the making of cotton goods. Then come lumber and timber products, flour and grist mills, cotton-oil mills, petroleum-refining, slaughtering and meat-packing, tobacco-manufacture, the making of iron and steel

products, fertilizers and many other things. The largest pulp mill and the largest cotton mill are in the South. Of these industries a large per cent were brought about by Southern men using Southern capital. Some of them are as old as the South itself; some are very new. A new industry is the making of rayon from wood fibre; another is making denatured alcohol for industrial uses from molasses; and still another is the making of paper from yellow pine or from cotton linters. The little gray seed of the cotton, once burned or thrown away, is now a box of blessings. From it comes golden oil that rivals olive oil and is important in the making of oleomargarine, lard, soap, perfumes, and other things. Hulls, linters and meal also come from it. From the linters come guncotton, material for mattresses, and many other things.

Among many manufacturing cities we may think of New Orleans, noted for sugar-refining; of Atlanta and Dallas, leading in the manufacture of agricultural machinery; of Birmingham, the centre for iron and steel products; of High Point, famous for furniture; of Winston-Salem, Durham and Tampa, manufacturers of tobacco; of Richmond, with a great variety of factories. Hundreds of little towns have one or more factories.

The South has its share of the population and area of the country. It has advantages for the development of agriculture, of the animal industries, and for lumbering. It leads in many important mineral products. These industries supply raw materials for manufacture. It has a long coast-line with good harbors and transportation lines from the interior leading to them. Its climate is not a serious hindrance to any industry or to any class of people. In view of these conditions and resources it is reasonable to predict that the South will continue its rapid progress in manufacturing.

Education has its highest development in the cities

Public-school work in the best cities of the South is much like that in the best cities of other sections. Education in the rural sections is generally below standard. Since the South is largely rural, it ranks low in educational development generally, but it is improving rapidly. In higher education the South has had a long and honorable history. The second oldest college in the United States is William and Mary, in Virginia, dating back to 1693. The best colleges and universities of the South compare favorably with those of other sections. One of the greatest needs is for better-trained teachers. Peabody College for Teachers at Nashville, Tennessee, is the best-known school of its kind in the South, but there are many others.

There are special schools in the South for the foreigners who cannot speak English, particularly for the Mexicans, and special schools for the negroes. North Carolina, a leader along several lines, is leading also in bringing about equal educational opportunities for all her citizens. Among many schools for negroes, the three best-known are Fisk University in Tennessee, Hampton Institute in Virginia, and Tuskegee Institute in Alabama. The founder of Tuskegee was Booker T. Washington, of whom it was said that he did more for his race than any other black man that ever lived. That school, founded in 1881, has now more than 100 buildings, 275 men and women on its faculty, and teaches many industries. When we remember that there are negro men and women living to-day who once were slaves, we wonder at the remarkable progress the race has made.

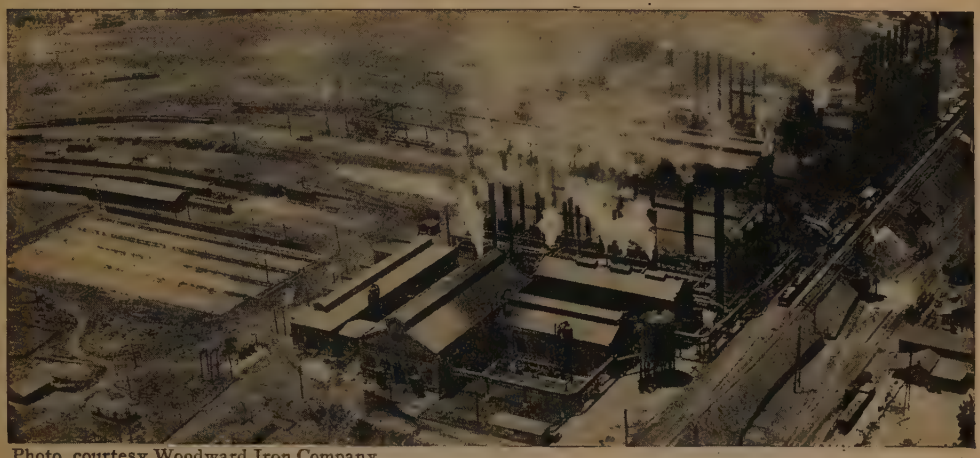
Education should be made stronger in the South. All lines of Southern industry would help themselves if they should undertake a campaign for better schools in the territories they serve. "A democracy cannot be built on the backs of ignorant men," said Governor Aycock of North Carolina. The greatest need of the South to-day is not wealth, nor labor, nor markets, but it is education for good citizenship.

Commerce and trade is the work of cities

In the South, from Baltimore to Brownsville there are two main rows of cities. One is at the inner edge of the Coastal Plain, where you have found that manufacturing is mainly carried on. The other row is along the three-thousand mile coast-line wherever harbors are naturally good or have been improved by man. Between the two rows are smaller cities and towns, and across the Alleghenies are others.

The South leads all other sections in value of exports, chiefly cotton, oil and tobacco. Through its ice-free ports it

INDUSTRIES IN THE LOWER SOUTH



Photo, courtesy Woodward Iron Company.

Alabama has an important advantage in the manufacture of iron and steel. Both coal and iron are near together. These are the immense blast furnaces at Woodward, Alabama.

Texas is one of the great oil regions of the world. In these steam stills the oil is refined by a complicated process called fractional distillation.

Photo, courtesy New Orleans Association of Commerce.

Louisiana is the principal state in the production of cane-sugar, and this is the enormous plant of the American Sugar Refinery in New Orleans. We tell you on page 3415 what goes on inside the plant.

sends its own products and also many products of the Middle West. New Orleans is the most important Southern city in value of imports and in variety of exports. Among United States ports Houston ranks third in export tonnage and New Orleans fourth. At Savannah, which is the largest market in the world for naval stores, the wharves are crowded with barrels of rosin, tar and turpentine for export. Other important ports are Tampa, Port Arthur, Mobile, Charleston and Galveston. Through all the ports of the South exports go to foreign countries—cotton, tobacco, petroleum, lumber, naval stores, meat products, and much grain from the Middle West goes through Southern ports. The long coast-line and the nearness to the Panama Canal give the South an advantage in trade with the Latin American countries to the south and with China and Japan. Distance from Europe is a permanent disadvantage for the Gulf Coast section.

Photo, courtesy Dallas Chamber of Commerce.
This interesting picture gives a brilliant impression of Dallas streets by night.

IF ONE SHOULD TRAVEL THROUGH THE SOUTH

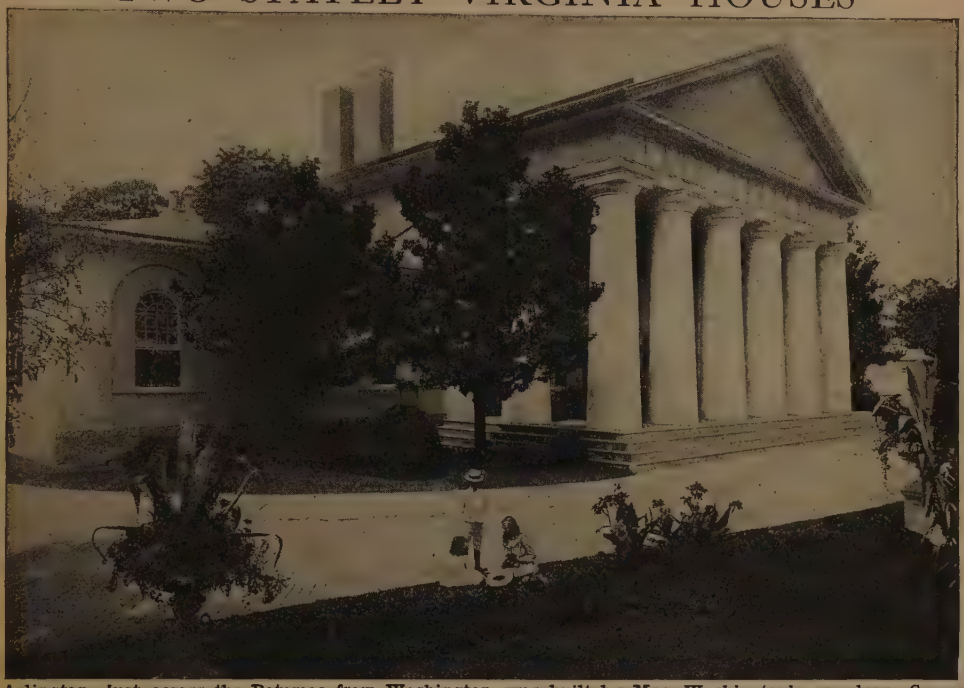
It would take a long time to see all the show places of the South. Among the most interesting of the sights are the Southern homes of the old Colonial type. Perhaps the best-known are Mount Vernon, the home of Washington; Monticello, the home of Jefferson; Arlington, Lee's home; and The Hermitage, the home of Jackson. Others just as interesting might have been mentioned. These are open to the public. There are many private homes of the same type. Then there are hotels—quaint and old, new and expensive. St. Charles, historic old hotel of New Orleans, is among the most interesting of the old type. The section has some of the finest resort hotels in the world, for example, the Grove Park Inn at Asheville.

Every state has natural show places of interest. Among many that might be mentioned are the Mammoth Cave of Kentucky, the Diamond Cave of Arkansas, the Natural Bridge in Virginia, and the mighty Mississippi, "Father of Waters." Florida, the greatest resort state of the Union at present, is called the "American Riviera," although it has no mountain effects as has that famous coast of France and Italy. Because "summer spends the winter there," Northern people are coming down to Florida in increasing numbers every year to escape the cold of their sections.

WHAT HAS THE SOUTH DONE TOWARD BUILDING TRANSPORTATION LINES?

Travel would be a weariness to the flesh if it were not for good transportation

TWO STATELY VIRGINIA HOUSES



Arlington, just across the Potomac from Washington, was built by Mrs. Washington's grandson, George Washington Parke Custis, in 1803. His daughter Mary married Lieutenant Robert E. Lee in 1831 and later inherited the house and lands. During the Civil War the place was taken over by the Government, and the grounds are now a national cemetery.

When the Confederate capital was moved to Richmond this house at Twelfth and Clay streets was occupied by Jefferson Davis, president of the Confederacy, and it is therefore sometimes called the "White House of the Confederacy." It is now a Confederate museum and is filled with interesting relics.

Arlington, copyright, National Photo. Lower photo by Burton Holmes; copyright, Ewing Galloway.

lines, which are necessary for business as well as for pleasure. In canals, navigable rivers, railways and improved highways the South is fairly well developed. While the South has only one-third of the area of the United States, it has more than half the mileage of navigable waterways. Bulky non-perishable material, such as steel, coal, cotton, tobacco and wheat, are shipped by water. Oil and gasoline are among important products shipped north by water. Water transportation is not always satisfactory because of changes in the level and in the channels of streams.

The South led in early railway development. The first hundred miles of railway in operation in our country was in the South. To-day some of the largest locomotives, the largest freight cars, and some of the longest lines are in the South. Many luxurious passenger trains run on Southern railways. North Carolina has led in the making of good highways as it has led in education. Recently people from many states and from Latin American countries gathered there to see the work of highway construction going on. Other states are active in this work. To-day the South is spending a third as much as the entire country on good roads. Southern highways are open for travel the year round. Motor transportation in the South, as in other parts of the country, is competing strongly with the railroads.

In spite of many natural advantages, the South has been under serious handicaps. Slavery and the presence of the negro gave the South a bad start. The Civil War set progress back for half a century. Now the greatest hindrances are probably three: too much dependence on cotton, both in farming and in manufacturing; the tenant system; and the wasteful use of natural resources. Those who know most about the situation in the country as a whole predict that the greatest agricultural improvement in the United States in the next twenty-five years will come in the South. That can become true only if diversification in farming becomes general. Diversification in manufacturing will probably proceed hand in hand with diversification in farming.

The French people in the days of royalty had a saying: "The King is dead. Long live the King!" In the same forward-looking spirit we can say: "The Old South has gone like the night. The day of the New South has dawned!"

Photos, courtesy Virginia State Chamber of Commerce.
These views tell part of the story of making the George Washington Highway which now borders the canal through the famous Dismal Swamp of Virginia. In 1725 Colonel William Byrd, founder of Richmond, advised the draining and reclaiming of this land; and later George Washington, who had surveyed the region, had a ditch cut ("Washington's ditch"), a long-ago beginning for the present canal.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5061.

FROM NORTH CAROLINA TO TEXAS

North Carolina has built hundreds of miles of excellent roads from the sea to the mountains. This is a section of the Old Hickory Highway (named for Andrew Jackson) among the mountains near Asheville, the famous resort.

On the left is Bath House Row in Hot Springs National Park, Arkansas, where medicinal baths are given to patients from every part of the United States. To the right is a drive in Cameron Park, Waco, Texas.

John Brown University and a water scene at Sulphur Springs in the Ozark Mountains of Arkansas.

Photos from Ewing Galloway; Hot Springs Chamber of Commerce; Whayne H. Farmer, Waco, Texas; and the Ozark Colony, Sulphur Springs.

WHERE CITIES SPRING UP IN A DAY

Though Oklahoma was admitted to the Union only in 1907, by 1920 it ranked twenty-first in population, and it is developing rapidly in agriculture and mineral production. This is the magnificent new Capitol building at Oklahoma City.

The Census of 1920 gave Oklahoma City a population of 91,295, and in 1930 the population had increased to 185,000. It is an important commercial and industrial city as well as being the state capital and the county seat.

Oklahoma was not opened for settlement until noon April 22, 1889. Here is the site of Oklahoma City on that day, with the eager throng hurrying to file upon the vacant land. Thousands entered the territory before nightfall.

Photos, Conrad & Waterhouse, courtesy Oklahoma City Chamber of Commerce.

LITTLE ROCK AND CHATTANOOGA

Little Rock has been the capital of Arkansas since territorial days. It is almost in the centre of the state and is an attractive and prosperous city. The stately Capitol building is a credit to the state.

Chattanooga, on the Tennessee River, which cuts its way through the surrounding mountains, is important historically and industrially. This view from Cameron Hill shows a part of Missionary Ridge in the background. Lookout Mountain does not show.

Market Street, Chattanooga, as it appeared in 1863, at the time of the battle. The battlefields of Chickamauga, Lookout Mountain and Missionary Ridge have been marked to show the positions of the contending forces in the fierce struggles.

Photos of Chattanooga, courtesy Chamber of Commerce.

Nearly all the state houses in the South are handsome and adequate, and that of Mississippi in the little city of Jackson is no exception to the general rule. Photo, Brown Bros.

Dallas is the second largest city in Texas and is growing rapidly. The Magnolia Building is a real sky-scraper. On the right is Main Street, Fort Worth, the chief railway centre of the state.

Broad Street in Augusta, Georgia, deserves its name. This is the main business street of the city. A part of the business section of Atlanta is shown on the right. The city was burned by General Sherman in 1864.

Photo of Dallas, copyright, Higginbotham, that of Fort Worth, courtesy Chamber of Commerce.

CHARLESTON, DIGNIFIED AND BEAUTIFUL

Often the waterfront of a city is sordid and unattractive, but in Charleston, South Carolina, the Battery, with its many attractive residences, is one of the most charming parts of the city, as you can see.

Some travelers maintain that in the spring the Magnolia Gardens in the Ashley River near Charleston are the most beautiful sight to be seen anywhere. Photo, R. S. McElwee.

The Pringle House, built in 1765, is a typical old Charleston house. On the right is Meeting Street, with the spire of St. Michael's Church. The ruins of Millwood, the home of General Hampton, are near Columbia. Photo of Millwood by Sargeant, courtesy Columbia Chamber of Commerce.

FROM RICHMOND TO THE SHENANDOAH

Capitol Square in "Richmond on the James" is an interesting spot. On the right is the Capitol planned by Thomas Jefferson and built in 1785, but considerably extended in 1906. The Confederate Congress met in this building, and here Aaron Burr was tried for treason. It contains Houdon's statue of Washington and a bust of Lafayette by the same artist. Other interesting statues representing distinguished Virginians are in the square. On the left is the City Hall.

Natural Bridge, in Rockbridge County, Virginia, is 215 feet from the stream to the arch.

The Canyon in the Grand Caverns of the Shenandoah at Grottoes, Virginia.

Photo of Natural Bridge, courtesy Virginia State Chamber of Commerce.

When a thing is properly balanced, it is said to be in equilibrium. There are three kinds of equilibrium, as shown by these tops. That of the first is stable, because, if slightly tilted the top returns to its original position; that of the second is unstable, because a slight push will send it over; and that of the third is neutral, because, if pushed, it moves, and then rests in a similar position in relation to the ground.

HOW THINGS ARE MEASURED

ALL our ideas of motion are relative—that is, something moves *compared* with something else. We cannot say in what direction, or at what speed anything is moving, or even that it is moving at all, except as compared with something else. It has often been declared that science is measurement, and though this is not the whole truth, yet it is true that it is the business of science to measure, and that the value of scientific work largely depends on whether it measures correctly or not.

In this question of motion, which comes into everything, there are two kinds of measurement we must employ. We make a measurement of this kind when we say a runner can run a hundred yards in ten seconds, or that it took us an hour to walk three miles.

When we say things like this we are measuring *time* and *space*. In every kind of motion we can imagine, time and space are concerned. There is something else also concerned, and that is *mass*, but we must begin with time and space. First of all, we must have some way of measuring time, and the most convenient interval is one complete night and day.

Though the periods of light and darkness are not constant, yet the spinning of the earth *is* constant. It is getting slightly slower in the course of ages, because the tides act as a brake on it; but this is so slight that, for all our purposes, the length of the day is a perfectly fixed and constant thing. We divide this up into twenty-four parts, which we call hours, and these into minutes and seconds. A second is only a sixtieth part of a sixtieth part of a twenty-fourth part of the time the earth takes to spin around once. We call it a unit, as if time could be cut up into little pieces, each of which is a *one*, or a *unit* of time. All over the world the unit of time is the same. If anyone proposed that we should have a unit of time longer or shorter than a second, or that the units should be different in all countries, everyone would be horrified. If we had the sense universally to agree on units of weight and space as we do on units of time, much trouble and labor would be saved in very many directions.

First, as to space. If we think of a solid box, we shall understand that it is possible to measure space in three directions, or in the case of a flat thing like a sheet of paper, we can measure in two directions—though, of course, the third direction really comes in, for the paper has a certain thickness. If we can imagine a line that has no width, then there is only one direction in which to measure.

How a King's Arm Became a Measure for a Nation

But, whatever we are measuring, all we need is one, two or three measurements of distance, and so we want a unit of length, or distance—something to correspond to the second, the unit of time. In English-speaking countries the customary unit is the yard, which we divide into three feet, each divided into twelve inches. The length of the yard is supposed to have been based on the length of the arm of an early British king. There is no particular reason why it should be as long as it is, for it is not based on any natural distance, as the second is based on a natural period of time—the time of the earth's rotation. Nor is there any reason why the yard should be divided up, as it is, into feet and inches, and there is still less reason why 1,760 yards should make a mile. To tell the truth, all our measurements of distance, like our measurements of weight, are needlessly complicated. For ease and quickness of reckoning all our measurements should be in tens. Then, in order to reckon, we should only have to use the very simple method which we learn when we study decimals.

The Measure That Is Used All Over the World

All over the civilized world men of science have agreed on a certain kind of measurement called the Metric System (from the French word *metre,* meaning "measure," which is its unit of length.) In this system all the other measurements are based on the meter in tens. The length of the meter is slightly over 39⅓ inches, so it is a little more than three inches longer than a yard. To indicate fractions of a meter, there are used, all over the world, terms derived from Latin. For instance, the tenth part of a meter is called a *decimeter,* the hundredth part is called a *centimeter,* and the thousandth part a *millimeter.*

This, however, only begins to express the simplicity of the metric system. The great point about it is that all the other kinds of measurement are calculated from the meter. For instance, the pints and quarts not only are different in England and the United States, but they have nothing to do with units of length. In the metric system all the measurements of bulk are based on the length of the meter, and then the measurement of weight, or rather of mass, is based on the weight or mass of a certain bulk, the size of which is derived from the meter. The consequence is that weight and volume and length can all be understood in terms of each other in a moment, and reckoning becomes easy. Thus, if a man of science were now compelled, instead of using the French method, to do all his reckoning in inches, grains, pints, and so on, he would get about as much work done in a week as he now does in a day. Many sensible people want us to adopt the metric system generally, as it is already adopted for science everywhere; and some of us may live to see the change made.

The Unit of Mass Which the Men of Science Use

Now we have the unit of time, which is the second, and the unit of length, which is the meter; but when anything moves, there is another question besides time and space, and that is the amount of stuff that happens to be moving.

In this country we reckon in grains, ounces and pounds. These have no relation whatever to yards or to inches or to pints. But men of science do not reckon in these ways. They choose a unit of mass that has a simple relation to our other measurements. They choose water because it is so familiar and important. Now, we know that water is at its densest, or is *most shrunken,* when its temperature is four degrees above zero on what is called the Centigrade scale; so men of science take, as their unit of mass, the mass of one cubic centimeter of pure water at the temperature of 4° Centigrade. This unit of mass is known as a gram. It is roughly equal to about fifteen grains. As in the case of the meter, we can divide the gram into tens, hundreds and thousands, or multiply it if necessary.

In the same way men of science use the scale of temperature called Centigrade, meaning "hundred steps," based sensibly on tens. On this scale 0, standing for nothing, is the freezing-point of water, and 100 is the boiling-point of water. This scale is used by men of science all over the world, and for ordinary purposes, too, in many parts of the world. But in English-speaking countries ordinary people still stick to the Fahrenheit scale, which, by the way, is not even an English invention. On this

scale the freezing-point of water is 32, and the boiling-point 212. It is never used in science.

We have sometimes used the word "weight" and sometimes "mass." Generally, weight is sufficient for our purposes, because weight and mass practically come to the same thing; but in reality weight and mass are quite different, weight being a consequence of gravitation, while mass is the actual amount of stuff in a thing.

WHERE A POUND DOES NOT WEIGH A POUND

If gravitation ceased, there would be no more weight, but the mass of everything would be unchanged. A pound of lead contains a certain amount of lead, wherever it is; but it really weighs slightly more than a pound if you throw it into a ditch, and weighs a trifle less than a pound if you hold it up in your hand, because weight depends on gravity, and gravity depends on its distance from the centre of the earth. On the moon the lead would weigh far less, on Jupiter far more, and on the sun still more; but the mass of the lead would remain exactly the same all the time.

Now that we have our units of time and space and mass we can begin to put them together, and then they become very interesting. When we reckon time and space together we get the idea of speed—how much time occupied in covering certain distances. In science it is common to take together the idea of speed and the idea of direction, and the word that is used is *velocity*.

Velocity means more than speed, for when in science we say that a thing has the same velocity as another thing we mean that it is moving at the same speed and also that it is moving in the same direction. Here, however, we need only think of speed, and need not trouble ourselves about velocity. Sometimes in nature we find that speeds regularly increase or regularly diminish. This happens, for instance, when a body falls by the influence of gravity, or when it is thrown up and is slowed down by the same influence.

It has been proved that whenever anything falls to the earth under the influence of gravity, in each second of time it passes through 32 more feet of space than it did in the second before. Thus, in the first second it falls 16 feet, in the next second 48 feet, in the third second 80 feet. This explains to us why it is more serious to fall from a great distance than from a small distance. If gravity simply pulled a body at a certain rate which did not change, it would hurt us no more to jump from a high tower than to jump off a chair.

Of course, when we state this about the speed of motion under gravity, we assume that nothing interferes with the action of gravity. But we know that gravity is not the only force in the world. Suppose a raindrop had to drop through empty space to the earth. At the end of the first second its speed would be 32 feet per second; in the next second it would fall 48 feet, in the third 80 feet. If we knew the height from which it began to fall we should be able to calculate its speed when it reached the ground. Theoretically that speed should be quite terrific. In practice, however, as everyone knows, raindrops do not strike the earth at great speed. The air resists the falling of the raindrop and slows it up.

HOW THE EARTH'S PULL AFFECTS THE EQUILIBRIUM OF BODIES

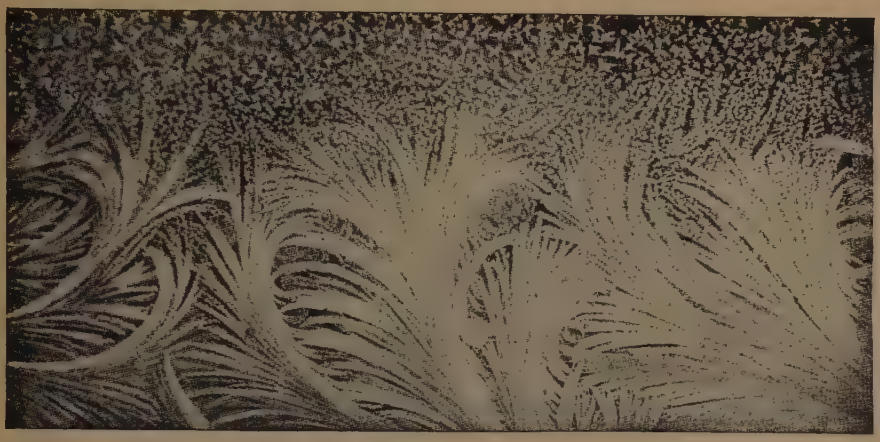
When the earth is pulling falling bodies toward it, what we notice is the speed at which the bodies fall. But the earth is also pulling any body which stands on it, and the pull acts through the centre of the body's weight. If this centre of weight is above the centre of the figure of the body, then it will be seen that the body will tend to fall over. The balance, known as equilibrium, is easily upset. If the gravity centre is below the other centre, the body will not be upset. If they coincide, the equilibrium is said to be neutral.

One case we call stable equilibrium. In this case the body tends to resume its old position. We can tilt a cube considerably, and yet it tends to return to its position. In the case of unstable equilibrium, the object easily takes another position, as an egg when balanced upon one end. There is a third state of equilibrium known as neutral. In this case the forces are equally balanced in all directions. A billiard ball resting upon a smooth table is an example. If untouched it remains still. When touched gently it rolls a little and stops. At no point in its surface is the equilibrium greater than at any other.

THE NEXT STORY OF THE EARTH IS ON PAGE 5035.

WHITE JEWELS THAT FALL FROM THE SKY

The most dreary scene looks beautiful when covered with a mantle of snow, but it is not only thus that snow is beautiful. If the newly fallen flakes are examined under a magnifying glass they are seen to be made of delicate crystals arranged in star-like forms. Rarely do more than one or two of these forms fall at one time. When the flakes are pressed together they lose these dainty shapes.



MASTER JACK FROST, ARTIST

GIRLS and boys who live in countries where the thermometer drops below the freezing-point at certain seasons of the year talk glibly of the doings of a certain mysterious being, Jack Frost. No one has seen Jack Frost, but who has not felt him pinch or nip nose and ears on a cold, wintry day? He freezes lakes and rivers into thick ice; he makes the ground as hard as steel; he cools the air so that instead of rain snowflakes fall and form a fluffy coverlet for the shivering earth. But it is not of the useful nor distinctive things done by Jack Frost, a winter engineer, that we want to tell about here. We prefer to think instead of the marvelous pictures and sculptures produced by Jack Frost, a truly great artist.

In the autumn, when the leaves of the maples have turned from green to flaming orange or vivid yellow, Jack Frost gets out his queer paintbrush and begins to practice his art. Whoever goes out to the woods or fields on late October or November mornings will find grass, fences, bushes, leaves, and even the ground, covered with hoarfrost. The rising sun, on such a morning, turns the world into a diamond-studded fairy kingdom, for each tiny crystal of hoarfrost flashes back an image of the light-bringer.

The hoarfrost is the air moisture which freezes when the temperature falls below 32° Fahrenheit and forms a deposit upon the nearest object. Some of the hoarfrost crystals are most delicate and beautiful in appearance, and they group themselves into astonishing pictures. Feathery spray, and coral and lace ornaments greet the searcher for Jack Frost's treasures.

Beautiful as they are, these hoarfrost pictures and crystals are very inferior to Jack Frost's masterpieces, the etchings on windowpanes. Windowpanes are better than canvas for our artist's purpose, and on their smooth, colorless surfaces pictures grow with magical speed. Jack Frost works rapidly with his invisible brush, and watchers, however sharp-eyed, cannot catch him at the job. The picture develops before their eyes. Exquisite ferns, bolder bracken, lace-patterns, forests of tiny firs, perfect oak leaves, ostrich plumes, moss, seaweed, and scores of other designs, are known to

all dwellers in countries where the winters are long and cold. It is said, however, that no two windowpanes have ever been frosted exactly alike.

Scientists tell us that if the temperature is below 32° and water in the air comes in contact with a still colder surface, then a part of the water-vapor of the air will condense upon the colder surface as ice or frost. Windows of cool or cold rooms show better frost pictures than do windows of heated rooms.

In windowpane pictures Jack Frost uses his paintbrush and produces wonderful results, worthy of exhibition in any art gallery. But he is a talented fellow—he is a sculptor as well as a painter. He is generous, too, for he scatters broadcast his gems of sculpture—the snowflake jewels. Snow is nothing but water crystallized into forms more or less geometrical. A snow-crystal is generally of hexagonal, that is, six-sided, shape. Some of the flake designs are rare and intricate in pattern and have fine engraving upon their surfaces. Some crystals have air tubes which appear as dark tracings. Many of the snow-crystals have come great distances, and have grown as they passed from layer to layer of cloud and air. The journey to the earth is not always smooth, and many snow-crystals are broken on the way, so that perfect specimens are not at all common.

The easiest and best way to examine snow-crystals is by means of a receiving-board, a flat bit of wood covered with black velvet or a black woolen material. Against this dark background the finest arms of a crystal can be distinguished. Sometimes on the receiving-board will fall only one perfect crystal during many hours of watching. A person who knows how to photograph snow-crystals will lift a perfect specimen upon a small sharp-pointed stick and transfer it to a prepared slide, where its picture is taken by a camera with a microscope attachment. Certain types of crystals can be seen with the naked eye. When we hear anyone say, "Mother Goose is shaking out her feather-bed," we know that big soft flakes are falling, and it is such snow-crystals that we can see without a magnifying glass. These crystals are lace-like and star-shaped, and have not traveled far. But the travelers from a distance are small and hard, and they have to be examined through a microscope if we want to study their designs.

Jack Frost has been modeling these precious ice gems for uncounted years, and probably a few people, from time to time, have remarked on their beauty. But it was not until 1882 that the world was able to appreciate properly the wealth of design found in snowflakes. Early observers of snow-crystals had relied upon magnifying glasses to reveal the details of their subjects. In 1882, however, Wilson A. Bentley, of Jericho, Vermont, photographed some snow-crystals successfully—he was the pioneer in that field. Since that time he has made over 3,500 photographs of snow-crystals, 400 of frost-crystals, and many hundreds of related subjects.

In twenty years Mr. Bentley found 1,300 perfect snow-crystals and took their pictures. For some of them he waited hours, braving zero weather and blizzards until he was almost numb. Northern Vermont was an ideal spot for this work, because the winter is long and snowstorms of all varieties occur. Unfortunately there is one quality, indeed the greatest beauty, of the snow-crystals which the best camera cannot photograph. That is its prismatic coloring and radiancy. All the colors of the rainbow are reflected from the tiny crystal-arms, just as they are from a diamond.

Clever men who make patterns for beautiful articles now borrow freely from Jack Frost's models. Rare designs for brooches, pendants and rings are copied by jewelers. Lace-makers use the filmy delicate patterns for their finest work. Wall-paper designers and cloth-weavers take snow-crystal types for their designs.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5055.

PICTURES IN JACK FROST'S FAIRYLAND

Very beautiful is the work of the frost in transforming trees and shrubs into a miracle of delicate filigree work that glitters and sparkles as the rays of the sun strike upon the tiny crystals of ice.

A tangled mass of twigs and branches, however dead and dull, becomes like a silver fountain or a mass of down when the hoarfrost, like some cunning craftsman, touches it with his magic finger.

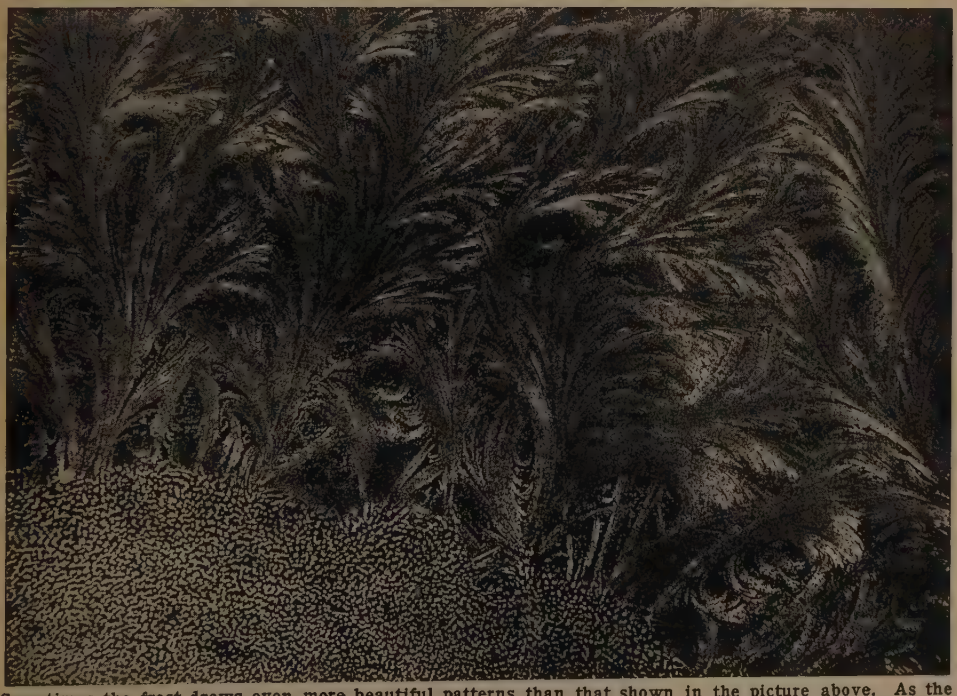
THE MAGIC TOUCH OF THE FROZEN DEW

The spruce fir, our Christmas tree, is always graceful-looking, but when every branchlet and needle is covered with the glistening crystals of frozen ice the tree becomes a vision of loveliness.

After a slight hoarfrost we may easily trace the veins and margins of every leaf by the fringes of silvery crystals that settle on these hard parts of the leaf, while the softer parts are merely wet.

THE FROZEN VAPOR ON THE WINDOW

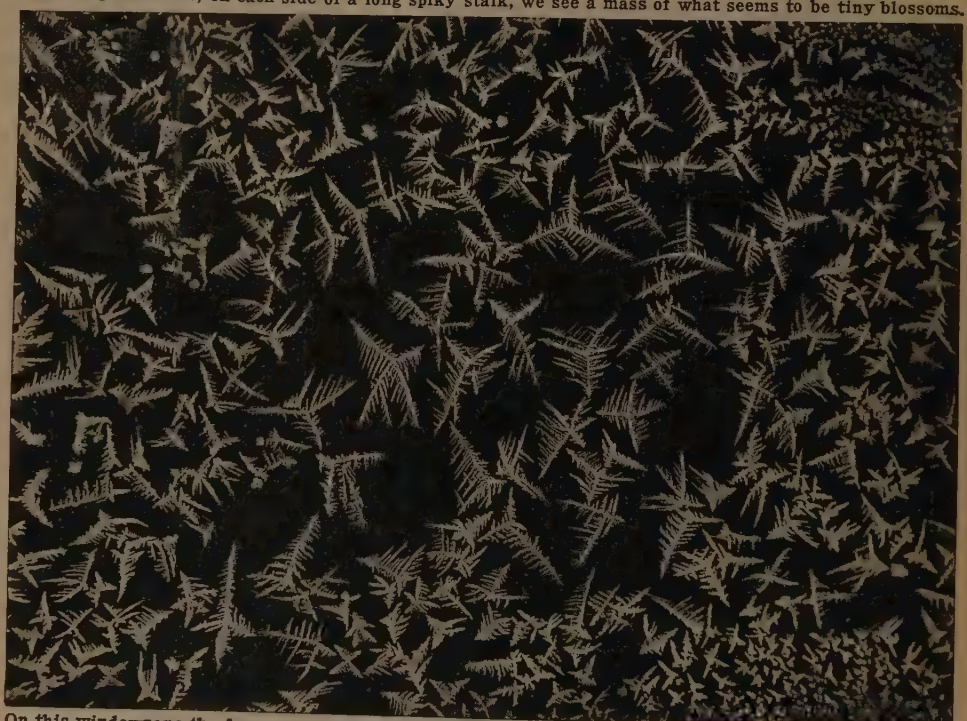
Not less beautiful than the hoarfrost out of doors is the delicate filigree work on the windowpane indoors. It takes a variety of dainty forms, like natural objects. This example is like seaweed.



Sometimes the frost draws even more beautiful patterns than that shown in the picture above. As the moist air in the room strikes the cold glass of the window it is frozen into forms like the most delicate feathers.

FROST PICTURES OF FLOWERS AND FERNS

The particular forms that the frost on the windowpane assumes depend largely upon the currents of air near the glass. Here, on each side of a long spiky stalk, we see a mass of what seems to be tiny blossoms.



On this windowpane the fancy of Jack Frost has taken another, though similar, direction to that shown in the picture above, and we have a wonderful collection of dainty fern leaves varying in size and shape.

A PYRAMID OF SILVERY FEATHERS

There is nothing commonplace about hoarfrost. It covers all the trees and plants with its jeweled mantle of dazzling white, and yet the result is never the same. Snow may cover the face of the earth till all things wear a uniform dress, but not so the frost. This cedar looks like a pyramid of silvery feathers shining in the morning sun.

A BUSH OF SPARKLING DIAMONDS

Nowhere is the work of the frost more striking than in the handling of bushes and plants that have a mass of thin branches and twigs; even the slightest stalk grows into a band of sparkling diamonds.

A closer view of the frosted cedar which we see on page 4911 does not spoil the illusion. These drooping branches, covered with glistening white, seem to be the tail feathers of some beautiful bird of paradise.

What does such a sign mean?

LAWS THAT WE SHOULD KNOW

WE have been speaking of the Law and its authority over us all, high or low. Too often it happens that people regard the Law as some dark and sinister figure intent on preventing us from living our lives in the ways we would choose. They speak of Law as if it were the enemy of freedom; as if our pathways in life were bordered with such notices as "Trespassers will be prosecuted," and "Keep off the grass."

This is an entirely wrong point of view. Law is order, and order is the greatest freedom for the greatest number. Disorder is not freedom: it is only excess. If there were no laws, might would be right. Civilization has grown out of law.

The foundation of our laws is the inspiration of Moses. If all of us kept the Ten Commandments, serious crime would be reduced, our prisons would be almost empty, and few police would be needed. But that is an ideal we are not likely to see realized. There have been, are, and ever will be, those who covet the goods of others, those who steal, and even those who kill.

In ancient days communities took measures to repress such people among them, and from the practices of these communities slowly and gradually evolved the Common Law of England, which Englishmen have taken to every land they have colonized. This Common Law is the custom of the people. It is the justice of our remote ancestors. In addition to the Common Law, however, there is a great deal of Statute Law—special acts passed to deal with matters that develop from time to time as the habits and customs of the people change. Our ancestors had no customs regulating railways, motor cars, flying machines, telephones, post offices, and the innumerable products of modern invention, because in their days such things were undreamed of; yet even in our modern Statute Law we can trace the guiding principles of the Common Law—the great principles of justice and equity which govern the relations of man with man.

Some people know quite a lot of law, others know a little, and some know none at all; but the curious thing is that, according to the law itself, everyone is supposed to know it all. The old saying is "Ignorance of the law is no excuse." The reason for this is that if anyone breaking the law could plead in defense that he did not know he was doing wrong, most wrongdoers would escape punishment, because it is impossible to prove the

extent of a person's knowledge or ignorance.

There is, therefore, all the more reason why we should know what we may do and what we may not do; and when we think out the reasons why some acts are forbidden, though apparently innocent in themselves, we realize that in having to give up a little of our own personal freedom we enlarge the freedom of others.

THE BAD OLD DAYS WHEN MEN WERE HANGED FOR STEALING

All the many things which are punishable by law are, strictly speaking, crimes. Highway robbery is a crime, and so is riding a bicycle on a footpath; but there is a vast difference between these two crimes. Most of us have cycled on a footpath, but we are not therefore criminals. We propose, therefore, to speak here of such things as "wrongful acts."

Wrongful acts may be divided roughly into two classes—those against the person and those against property. Wrongful acts against the person are now treated as the more serious, although not very long ago there was no difference between the punishment for murder and the punishment for sheep-stealing: hanging was the penalty for both. Happily that barbarism has passed away, and the death penalty is now imposed only for a few crimes, and in some places for none. The tendency nowadays is all toward leniency. It is recognized that those people who lapse into wrongdoing are in many cases creatures of circumstance and environment, and that if given the opportunity to redeem their characters in different surroundings they will atone for their offenses.

THE LAW THAT GROWS MORE HUMANE AND MORE COMPLICATED

But if the law is now more humane, it is every year more complicated. Acts are passed creating new offenses, and it seems to become more and more difficult for us to keep within the law. But if we study a list of wrongful acts, and consider why they are wrong, we see that there is always a reason. Take the following list of wrongful acts which are directed against the person:

Letting off fireworks in the street.
Playing football in the street.
Riding behind vehicles.
Cycling on the pavement.
Cycling after dark without a light.
Driving a motor car after dark without lights.

If we think for a minute, we shall realize that all these things are punishable for the simple reason that they endanger either our own life or the lives of others. If we let off fireworks in the street, it is possible that we shall either burn the clothing or injure the eyesight of passers-by, or perhaps cause a horse to bolt. If we ride a bicycle on the footpath, we make the footpath dangerous for pedestrians. If we cycle after dusk without a lighted lamp, we run the risk of being knocked down and injured by a motor car. If we drive a motor car without lights, we may cause a serious accident.

The object of the law is not to prevent us from enjoying ourselves, but to prevent us from injuring ourselves or others. Therefore, if a policeman interferes when we are doing any of these wrongful acts, it is because he is carrying out his duty of safeguarding the lives of us all. Cycling on the footpath may seem a harmless amusement, but think what the result would be if all cyclists used the footpath. And, if cyclists, why not motorists?

THE OLD AND VERY WRONG IDEA THAT FINDINGS ARE KEEPINGS

In the same way let us consider those acts which damage property or deprive people of their quiet enjoyment of it, such acts as:

Breaking windows.
Scratching the bodies of motor cars.
Chalking doors or fences.
Spoiling new paint work.

If we throw a stone and break a window, or damage a man's car or fences, we deprive him of the quiet and full enjoyment of his property, and this is almost as bad as actually stealing it.

We all know that to steal is a very grave offense, but some people do not know that if we find a purse, or any valuable article, in the street or elsewhere, it is stealing to pick it up and keep it without trying to find the owner. *Findings are not keepings.* If we find anything of value in the streets we should take it to the police station; if we do not, we may get into trouble. We may think this very stupid of the law, but we should not think it stupid if we had lost something we valued highly, and the police returned it to us because someone, knowing the law, had found it and taken it to the police station. If the owner can-

not be found, we have a better right to the property than anyone else.

Here is a list of another eight things which the law says we must not do:

We must not obstruct the pathway.
We must not throw things at people in the street, or insult them in any way.
We must not travel in a train, bus or car without intending to pay our fare.
We must not, without proper reason, ring the doorbells of houses.
We must not be cruel to animals.
We must not pick flowers in any private garden or window-box.
We must not place nails, stones, or any other things in the roadway likely to cause damage to any vehicle, or injury to its occupants.
We must not prevent a policeman from doing his duty.

THE THINGS WE MAY DO AT THE RIGHT TIME AND IN THE RIGHT PLACE

We may wonder what there is left that we may do, and the answer is that we may do almost anything we like if only we do it at the right time and in the right place. We can cycle in the road, but not on the pathway. We can play football in the football field, but not in the street. We can ring bells, but not to annoy people. We can pick flowers, but they must be ours. We can travel on a street car if we pay our fare. We can let off fireworks if we do so in a private place, and we can cycle without a lighted lamp in the daytime.

We should all be very thankful that we are living in these days and not in the days of fifty years ago. In those days young children were made to work at an early age; their education was neglected, and their health was ruined by the surroundings in which they had to work. During recent years, however, act after act has been passed to regulate the employment of children.

HOW THE LAW LOOKS AFTER THE BOYS AND GIRLS OF TO-DAY

Generally speaking, it is illegal for any child to be employed between the hours of 9 P.M. and 6 A.M. In most cities young children may not sell things in the streets, and may not be employed to carry articles so heavy as likely to cause them injury, or in any occupation likely to injure their health.

In the same way, the law does not consider it right that children should be free to take part in public entertainments. Except in the case of occasional entertainments for charitable objects, it is generally illegal to employ children on premises licensed for public entertainments after 9 P.M. There are exceptions to this general rule, because in some entertainments it is sometimes necessary to have child performers, but before these children can be engaged an application must be made to the proper authority. The law is even more strict where it is proposed to engage children for acrobatic or circus performances. The law nowadays looks after children in every possible way.

We have probaby read of little children who were used by chimney sweeps for cleaning chimneys in the days of our grandfathers. Little boys had to climb up inside the chimney with a rope, dragging the brush after them. There is little doubt that many timid and nervous children were frightened to death by this savage custom, which is now against the law. Scarcely a year passes without the law's taking further steps to safeguard children, both from physical and moral injury.

THE LAW THAT GUARDS CHILDREN FROM THE DANGER OF ALCOHOL

At one time the children of tramps, gipsies, and others who lead vagrant lives, received little or no education, but it is now an offense for a person who habitually wanders from place to place to take with him any child over five years old, and by so doing prevent it from receiving an elementary education.

Parents who used foolishly to give alcohol to children, in the old days when people believed in alcohol, must not do so now, for the law knows that alcohol is injurious to young people, stunting their growth, enfeebling their minds, and leading them to acquire an early taste for what they are far better without.

Where saloons are still permitted to exist, it is against the law for children to enter them or other premises where drink is sold. Here, again, the law is safeguarding the interests of the child.

Here is another list of things that children in most places must not do, though not all of these things are forbidden everywhere.

They must not attend police courts.
They must not go to pawnbrokers to pawn articles, whether for themselves or others.
They must not sell old metal to junk-dealers.
They must not beg in the streets.

They must not buy cigarettes or cigarette papers.

It is easy to see why these things should be forbidden. In police courts they will become familiar with vice and crime, and will learn many things it is better for them not to know. There is a temptation to steal, if they can easily pawn or sell articles, and children may yield to the temptation. Bad men often encourage mischievous boys to steal metal pipes, and the like, from unoccupied buildings, and pay them a few cents for material which will cost many dollars to replace. A child who begs on the street is not likely to grow up to be an industrious man. It is easy to understand why the sale of cigarettes to young children is forbidden nearly everywhere. In most of these cases the punishment is inflicted upon the grown-up who encourages or allows the child to do any of these things.

WHY YOU MUST TAKE NOTICE OF THE TRESPASS BOARDS

Most of us have seen boards bearing the words "Trespassers will be prosecuted," but these are not quite so important as they seem. Of course, we should not think of walking about in a private garden, or walking into a house if we saw the door open, but it is another thing when we are tramping across the country to find ourselves faced with a notice threatening us with penalties if we walk across the land. Trespassing for unlawful purposes is, of course, entirely wrong. This we must not do, and the punishment for such action is severe.

Since motor cars have become so common the question of trespass has become much more important. Careless and thoughtless people drive into the country, build fires, take fruit, break flowers and shrubs, let down bars or open gates and perhaps allow cattle to escape. Where they do not do these things they often leave rubbish and refuse, thus destroying the natural beauty of the place. For this reason stricter acts against trespass have been passed. We cannot blame the owners of land for being angry, when we see how little many motorists care for their rights.

The writer has spent his vacation in the same place for ten years or more. The first year he did not see a single "No Trespassing" sign in his walks or drives. Now the place has become much more popular, and in a short drive one may see a dozen or more signs warning people to keep off the land. The reason is the disregard of the visitors for the owner's rights.

WHY PEOPLE ARE PUNISHED FOR ALLOWING ANIMALS TO STRAY

There is another kind of trespass which is not generally understood, and that is allowing any animals to stray on to the land of other people. If we keep animals, it is our duty to keep the land on which they graze properly fenced, and if we omit to do so, and the animals stray on the land of other people and damage crops or flowers or fruit trees, we are liable for the damage.

Formerly children who committed wrongful acts were dealt with at police courts and before magistrates like grown-ups; but there are now special courts nearly everywhere known as Children's Courts, and when cases are being heard the general public is not admitted. The intention is to prevent children from becoming associated with grown-up wrong-doers, for young persons must not be allowed, while being taken to or from the court, or while waiting for the case to be heard, to associate with grown-ups charged with an offense. In former days a child might be sent to prison to associate with hardened criminals. Almost always he came out worse than he went in. The new idea is to prevent young people from being sent to prison, so that they shall not acquire a prison taint.

Now, if a child is guilty of an offense, the magistrate can dismiss the charge if the child promises to behave in future, or can order that the child shall be placed in the care of some fit person, or it may be sent to a reformatory or to an industrial school where it will be taught a useful trade. On the other hand, it should be remembered that the magistrate has power to order children to be punished by the parents, or to order the parents to pay a fine.

WHY ALL SHOULD HELP THE LAW THAT HELPS US ALL

Perhaps we now begin to realize that the Law is something to help us, and that there is no need to grow up in the belief that it is dangerous and unkind. The law is always seeking to be helpful to us all, and it is our duty in return to help the Law by not doing any of those acts which our conscience tells us we ought not to do.

THE NEXT STORY OF OUR OWN LIFE IS ON PAGE 5243.

Athens, showing the Acropolis and the Temple of Zeus.

GREECE, RUMANIA AND BULGARIA TO-DAY

NO land has had such faithful friendship as Greece in modern times, for all civilized nations realize how much they owe to the Greece of long ago, when the race living in this little land produced the most vigorous thinkers that had appeared in the world.

Greece is the smallest country that has ever been great. Though for a moment she was great in warlike conquest—in the time of Alexander—her real influence in the past was exercised through her intellectual and artistic energy. It has survived in her language, thought and art. But of Greece as a lasting force in history we read on page 1069. Here we glance at her as she stands among the countries of the world to-day.

Old Greece, the little land of story long ago, was conquered first by Rome, though she continued to live by her powers of mind, and finally conquered her conquerors through her thought and her art.

Then she was buried and almost extinguished, except for her existence in books, under the great Mohammedan invasion of Eastern Europe. It was not till 1821 that the Greeks reasserted themselves against their Turkish rulers, and in 1828, with the aid of England, France and Russia, they acquired full liberty.

Since that time they have been slowly extending the independence of their race over the southern part of the Balkan peninsula, which was their ancient home, and over the many islands of the Ægean Sea, where they spread in colonies during their early period of greatness.

Originally Greece was about the size of Scotland, and consisted of Attica, Peloponnesus and a strip of the end of the Balkan peninsula, backed by rugged mountains which separated her from Macedonia. Later this region was included, and gave new strength. Then there was also the island of Eubœa, and many small islands southward of Attica and along the shores of Asia Minor, with Crete and Rhodes still farther to the south. Now Greece has recovered from Turkey practically the whole of this territory, including Macedonia, and also Thrace to the eastward as far as the river Maritza. The present population of about six millions is probably a larger population than has ever before lived under one Greek government since the time of Alexander.

The most recent gain of territory, which came to Greece after the World War, was entirely due to the friendship of the Western powers, for during the most serious part of that war Greece played an ignoble part under

the leadership of her king Constantine, a Danish prince married to the sister of the German emperor. After Greece had long been a thorn in the side of the Allies, through the treacherous action of Constantine, she was finally influenced by M. Venizelos to take a stand. The king retired and was succeeded by his son, Alexander, who died in 1920.

At the close of the war the territorial gains of Greece were very great. They extended across Thrace to the Black Sea, leaving Turkey only a small portion in Europe around Constantinople. They included Smyrna, the chief port of Asia Minor, and the country immediately around it. At this time, entirely through the influence of Venizelos, modern Greece had realized to the utmost all her rightful ambitions.

But in politics modern Greece has not sought after wisdom. Bursting with pride, the country dismissed Venizelos, recalled Constantine to the throne, and started on an ambitious advance into Asia Minor which ended in her utter defeat by the Turks, who swept not only the Greek army but the Greek population out of the Anatolian peninsula. So Turkey recovered eastern Thrace and Adrianople, and shut Greece off from the Black Sea.

As a consequence of these disasters Constantine was finally dethroned by revolution and another son was accepted as king, the Government remaining in a state of revolutionary uneasiness, for the modern Greeks are the most easily swayed race in Europe. Later, a Republican revolution caused the king to withdraw into exile after a very short reign.

Greece is essentially an agricultural country, her chief productions for export being tobacco and fruits, particularly currants, of which she exports each year over 400 million pounds. Besides the currant vine, the olive, the grape vine, orange, lemon and fig trees are largely grown. Olive oil and nuts are among the leading exported products. Greece does not grow enough corn to feed herself, and her forests are rapidly being destroyed for fuel, with bad effects on a climate which is already too dry. There is a great variety of mineral wealth, but it is worked to only a small extent. Iron, magnesite, lead and chromite are the chief ores, and the salt industry is important. The sheep is the leading animal product.

The only large cities in Greece are: Athens, which, with its port, Piræus, has a population of over 700,000, and Salonica, 235,000, the terminus of the European railway system on the Ægean Sea. Other towns are Patras, 60,000, with a large currant trade; and Calamata, 28,000, the chief port for the fig trade. Several of the considerable towns are on the island of Crete, and the town of Corfu on the beautiful island of the same name has about 32,000 inhabitants. Salonica has a considerable Jewish population which came from Spain, and Spanish is still spoken there.

Athens, of course, is the great centre of attraction for travelers, and the study of its antiquities is regularly carried on by the leading Western nations. In this respect it vies with Rome and Jerusalem, for it is the past of Greece that casts a glamour over the whole land.

RUMANIA TO-DAY

THE origin of the Rumanian people is somewhat in doubt.

The country represents the Dacia of Roman imperial days, Dacia being the outlying province of the empire which bore the brunt of attempted invasion by barbarian hordes pouring down on it from the lands now called Russia and Hungary. It was therefore strongly fortified and garrisoned along the line of the Lower Danube, and the Rumanians say that they are descended, by birth and language, from these outlying defenders of Rome, and so have a close kinship to the Latin races. The greater likelihood is that they are a branch of the Slav stock, the Wallachs, who remained faithful by language and tradition to old Rome.

The two ancient states of Wallachia and Moldavia were the first states outside the Austro-Hungarian Empire to obtain partial independence of the Turks. In the eighteenth century they had a large share of local government, but had to pay heavy tribute to Turkey through a Turkish governor, who generally grew rich by his extortions. Late in the century they drew nearer together, and became known as the Danube principalities, and Russia

GREECE WITH ITS CHIEF MOUNTAINS, RIVERS AND TOWNS

AS THIS MAP SHOWS, GREECE, WHICH WAS A PENINSULA, IS NOW CUT COMPLETELY IN TWO BY THE CORINTH CANAL

4919

WHERE EVERY PROSPECT PLEASES

Corfu, from the garden of the Achilleion Palace.

White Tower, Salonica.

Mountain road, Crete.

Monastery of St. Barlaam.

The ruins of the Arch of Hadrian, Athens.

WHERE NEW AND OLD WORLDS MEET

Athens seen from the great stadium, with the Acropolis in the distance.

A street in Corfu.

The harbor and citadel, Corfu.

Phaleron Bay, Piræus.

assumed toward them an attitude of protection. In 1861 the two states were united, the name Rumania was adopted, and a prince was elected. The next prince was given the title of king.

The Rumanian race was spread, in 1914, far beyond the frontiers of the kingdom. Rumanians were in a majority in Russian Bessarabia and in nearly the whole of the mountain region of Transylvania, then belonging to Hungary; and they also were thickly scattered in the Hungarian plain, on the lower courses of the Theiss and the Danube. The prosperity of the country under freedom had led to a strong development of national feeling. But when war came in 1914 they acted in marked contrast with the neighbor state Bulgaria. When the war approached a crisis Rumania finally threw in her lot with the Western powers, and though German, Hungarian and Austrian troops overran her for a time, she resumed the struggle, and at its close became ruler of all the lands where the Rumanians are in a majority.

In this way she gained from Russia Bessarabia as far eastward as the river Dniester; from Austria, Bukovina; and from Hungary all Transylvania and the greater portion of southern Hungary, known as the Banat.

From Hungary Rumania received over 7,000,000 people, in the provinces now called Maramuresh, Crisana, Transylvania and Banat; from Russia in Bessarabia, over 2,000,000; and from Austria, in Bukovina, 800,000. Of her 18,000,000 inhabitants less than 8,000,000 were in the provinces of Wallachia, Moldavia and Dobrudja, which formed Rumania in 1914.

The new Rumania forms a compact country, with many races forming minorities in the regions that have been annexed. Over large areas the soil is rich; there are great forests of seventeen million acres, and abundant minerals, including coal, iron and salt. Petroleum is by far the most valuable product exported. The Danube serves as a fine waterway to the open seas. Still agriculture is the mainstay of the country. There is an enormous peasant ownership, for all the estates of more than 247 acres have been divided among the cultivators of the soil.

The capital, Bucharest, has a population of over 600,000, and there are a dozen towns with populations between 50,000 and 125,000. Ismail, 90,000, and Galatz, 101,000, are Danube ports; Constantza or Kustenje, 58,000, is the port of Dobrudja. Cernauti, formerly called Czernowitz, the chief town of Bukovina, has 111,000 people; Jassy (Iasi), the chief town of Moldavia, has 102,000. But Rumania is essentially a peasant country. Her development lies in the future, and her growth into a nation sufficiently varied in occupation and in calling to take her place as a modern state will be full of interest. She can take rank as a second-class European power. Her chief problem is the welding into unity of a variety of races which, before the war, inhabited lands ruled by Hungary, Austria and Russia.

Her great reserves of oil give her an important association with the modern industrial world, though she is not industrial. Her oil production is largely under the control of business men of other nationalities, but her fertile soil and the fine forests of Moldavia and Transylvania are possessions she can herself develop.

BULGARIA AND THE BULGARS

TO the south of the Danube, and crossing the Balkan range to the Rhodope Mountains, lies Bulgaria, inhabited by a Tartar race who appeared about the year 800 and adopted a Slav language.

The Bulgars were converted to Christianity in the ninth century, and at the beginning of the tenth century their emperor Simeon ruled from the mountains of Greece to the Carpathians, and from the Black Sea to the Adriatic. But later they fell under the rule of the Byzantine emperors, and were then annexed to Serbia, before, in the middle of the fourteenth century, they were conquered by the Turks during the thrust northward of that martial race.

No part of the Balkan region suffered more from Turkish rule, which in 1876 reached its high tide of cruelty in the massacre of fifteen thousand men, women and children. Mr. Gladstone roused public opinion in England, and Russia went to war with Turkey in defense of the people who were of the same religion

BIRD'S-EYE VIEW OF RUMANIA & BULGARIA

This map gives a relief picture of Rumania and Bulgaria as they might appear if we could fly high enough and had sight good enough to see them all at one glance. The principal rivers, mountains, cities and towns are shown, and we see that both countries have a coast-line only on the Black Sea, so that their vessels, before they can reach the high seas and main routes of the world's commerce, must pass through the Bosporus, the Sea of Marmora and the Dardanelles in order to get into the Mediterranean on the way to the ocean.

TYPES OF THE PEOPLE OF RUMANIA

A bride.

A shepherd.

A worker.

A service in Transylvania.

Peasants of the Carpathians.

THE OLD AND NEW CAPITALS OF BULGARIA

The Tsar Alexander II as he stands in Sofia, capital of Bulgaria.

The hillside town of Tirnovo, the old capital of Bulgaria.

The Rilo Monastery at the entrance to the Djumaia Pass in the Balkans.

Photos, The Exclusive News Agency and others.

and partly the same race as herself. Heroic campaigns were fought in the passes of the Balkans, and finally, by a treaty signed at Berlin by Russia, Turkey, Austria and Great Britain, it was agreed that Bulgaria should be a principality still under the Sultan, but with a government and a prince elected by the people. The province on the other side of the Balkans—Eastern Rumelia—was to remain under the direct authority of the Sultan; but in 1885 Rumelia was freed and united with Bulgaria. The country was declared an entirely independent kingdom in 1908. Turkey's authority was ended.

THE PEASANT FARMERS WHO OWN MOST OF THE LAND

Bulgaria is essentially an agricultural country, two-thirds of the people obtaining their living from the land, chiefly on small farms which they own, while the grazing lands and forests belong to the local community and are used in common. Wheat and maize are the principal corn crops, and much wheat is exported. Sheep are the principal pastoral animals, and there is a considerable manufacture of woolen goods for home use. Cattle are about half as numerous as the inhabitants. Much fruit is grown, including grapes, and tobacco is produced for export. Bulgaria is rich in coal and iron, but her mineral wealth has not been greatly developed.

Among the special products of the country are her embroideries and the perfume known as attar of roses. The decisive battle of Shipka in 1877 was fought in the midst of the rose gardens which cover thousands of acres on the slopes of the Balkans.

Sofia, the capital, with over 200,000 people, stands on a high plain and is of great antiquity, but has been quite modernized. It was an important town under imperial Rome, and it still has a church which is reputed to have been a Roman temple. Later it became a church, then a mosque, and now is a church again. Other considerable towns are: Philippopolis, 80,000; Varna, 60,000, the seaport on the Black Sea; and Rustchuk, 45,000, a seaport and fortress on the Danube.

THE FOOLISH PRINCE WHOSE AMBITION WAS GREATER THAN HIS JUDGMENT

By the treaty which followed the World War Bulgaria is allowed access, for her trade, to the Mediterranean Sea, and this is secured by arrangement with Greece through the port of Dedeagatch.

No part of the Turkish Empire had obtained more sympathy from the world than Bulgaria, but she had the misfortune to choose as her prince Ferdinand of Saxe-Coburg-Gotha, a man whose ambition outran his judgment. Elected prince, he soon declared himself a king, and then a tsar.

Toward the close of 1912, when Turkish rule had proved unbearable in the part of the peninsula still under the Sultan, Serbia, Bulgaria, Montenegro and Greece united in war against their common enemy. The complete defeat of the Turks was followed by a division of their European territory.

But a conference held in London failed to make a division of the conquered territory which would satisfy the conquerors, and the war was resumed by Serbia and Greece (joined by Rumania) opposing Bulgaria. Turkey resumed her occupation of Adrianople, which had been captured from her by the Bulgarians; and, defeated and exhausted, Bulgaria was obliged to submit, and lost to each of her enemies territory which would have been hers by the Treaty of London.

HOW THE BULGARIAN NATION PAID FOR THE TREACHERY OF ITS RULER

When the World War was being fought King Ferdinand, who believed the Germans were invincible, thought he saw a way of recovering Bulgaria's losses and making her the chief power in the Balkan peninsula. Forgetful of the part played by Russia in the delivery of his country from the rule of the Turks, and of the friendship by which Britain had supported Bulgaria, he made common cause with the Turks, joined in the war on the side of Germany, and attacked Serbia.

Such ingratitude and treachery met with due punishment. A month before the Kaiser abdicated Ferdinand renounced his crown in Bulgaria and fled, and under the final treaty of peace Bulgaria lost to Serbia part of the Macedonian territory she had claimed after the war of 1912, while to Greece was given Thrace, with Adrianople and the Black Sea coast south of Vasiliko.

Ferdinand was followed by his son Boris as king, and Bulgaria's troubles since the war have been only the internal strife of her political parties.

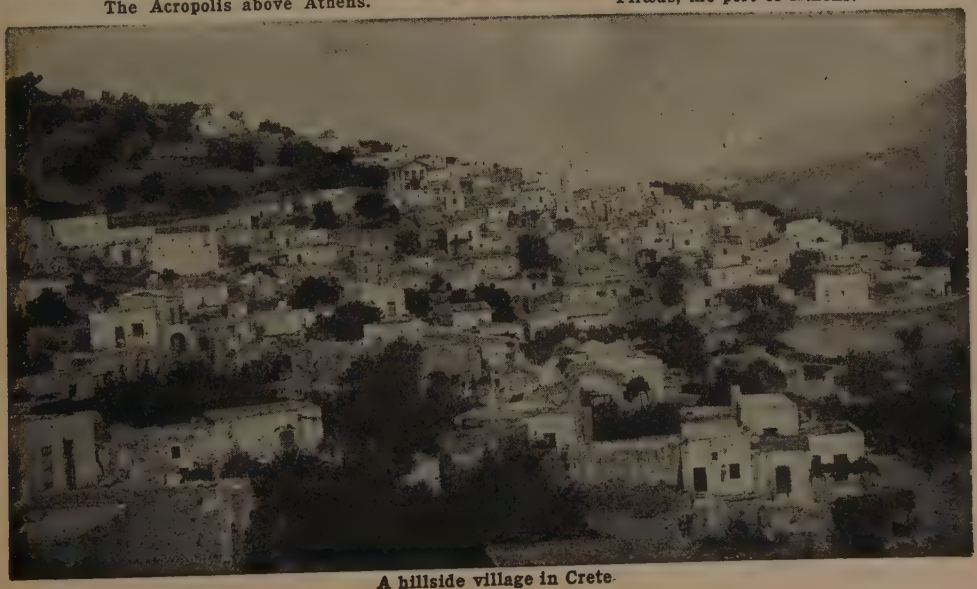
THE NEXT STORY OF ALL COUNTRIES IS ON PAGE 5039.

IN GRECIAN ISLES AND CAPITAL

The seaport of Corfu.

The Acropolis above Athens.

Piræus, the port of Athens.



A hillside village in Crete.

PRODUCTS OF A RICH COUNTRY

The huge grain elevators in the Rumanian harbor of Braila.

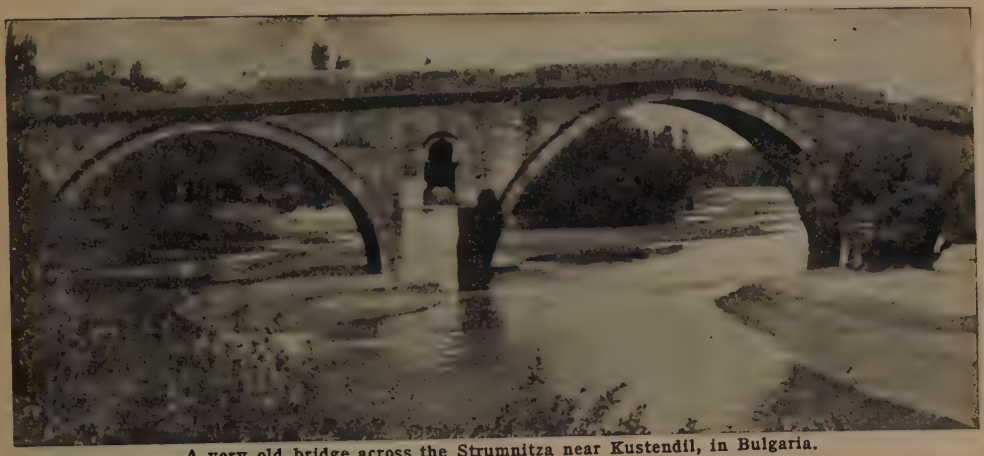
A halt by the way, near Tirgovishtea.

Old vinegar-press in a Rumanian village.

Oil derricks at Campina, Rumania.

The Cathedral at Bucharest.

ANCIENT BRIDGE AND WATER-WHEEL, BULGARIA



A very old bridge across the Strumnitza near Kustendil, in Bulgaria.

The Shipka Pass across the Balkan Mountains of Bulgaria.

A primitive water-wheel used for irrigation in Bulgaria.

THE PEOPLE WE MEET IN GREECE

A postman of Crete.

Little maid of Salonica.

A girl of Andravida.

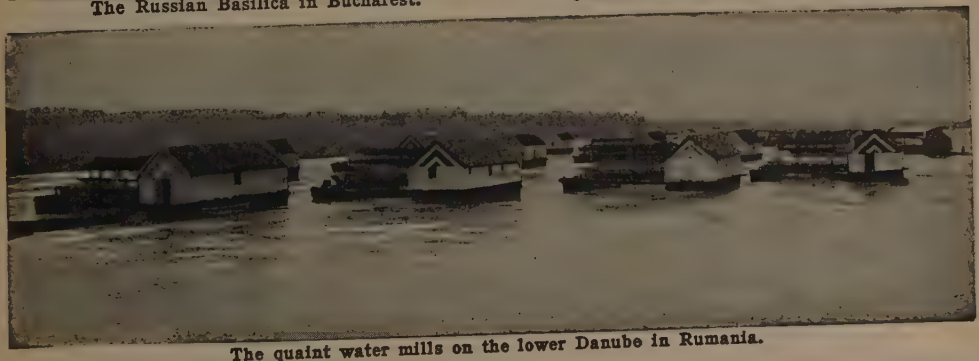
Boatmen in Mytilene harbor.

HERE AND THERE IN BUCHAREST

The roofs and domes of Bucharest, the capital of Rumania.

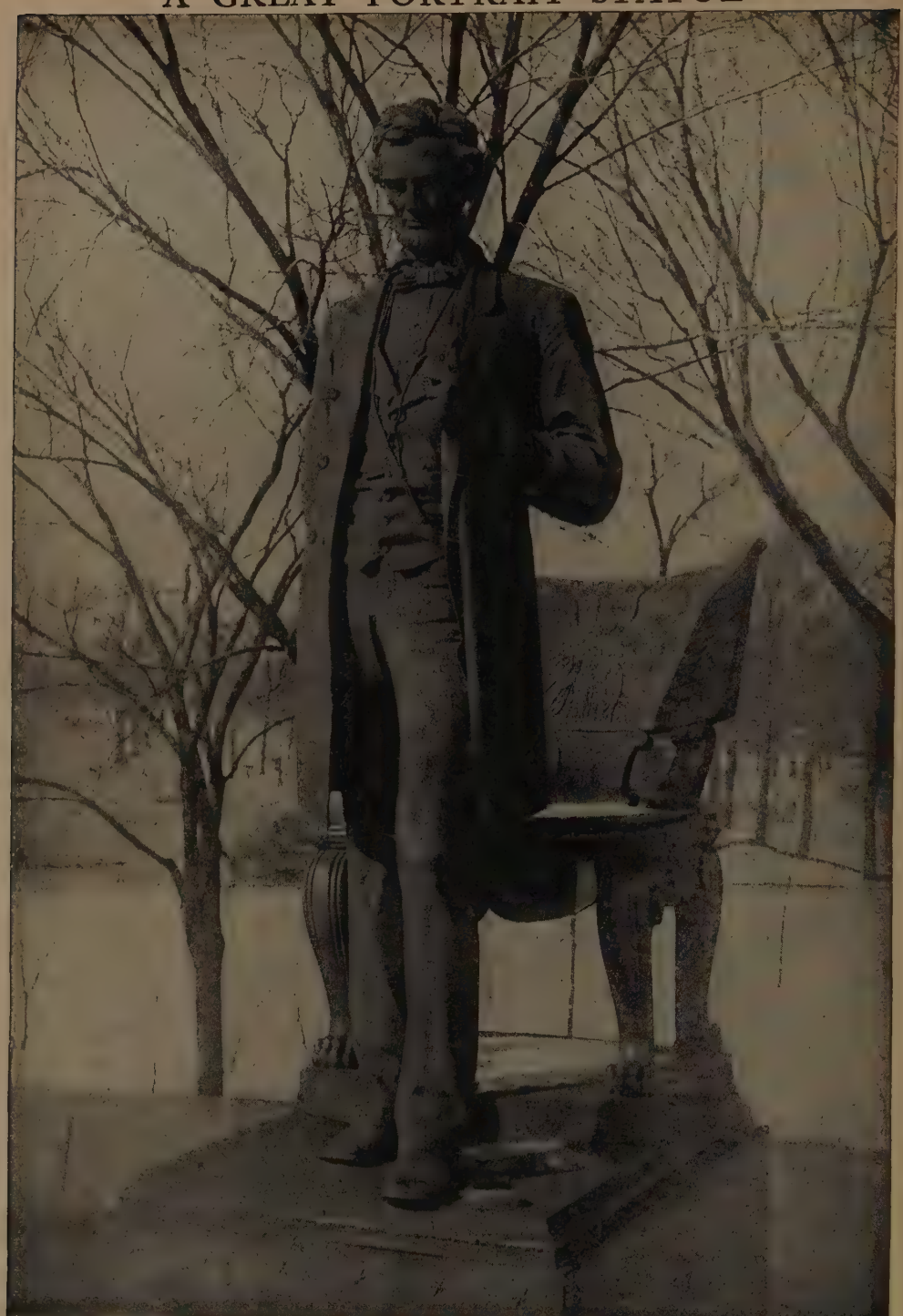
The Russian Basilica in Bucharest.

Church of the Three Saints in Jassy.



The quaint water mills on the lower Danube in Rumania.

A GREAT PORTRAIT STATUE



Photo, De Witt Ward.

In this statue of Abraham Lincoln in Lincoln Park, Chicago, Augustus Saint Gaudens shows the president as if standing lost in thought before addressing an audience. There is nothing over-dramatic or posed in the attitude. The quiet figure, treated simply but with vigor and breadth, indicates great force.

Photo, Ewing Galloway.

The Indian Hunter, by J. Q. A. Ward, in Central Park, New York.

SCULPTURE IN THE UNITED STATES

IN the United States sculpture had a late start, but its advance in the last fifty years has been thrilling in progress and promise. In colonial days there was no place for sculpture in the lives of the settlers and their children. To many of them a statue, or "image," was a sinful thing. Among the household goods unloaded from the Mayflower, someone has said, "We may be sure that never a statue came out of her hold." If a colonial youth had longings to express a feeling for beauty in form, he might find satisfaction in making furniture or planning buildings and their decorative details. Never seeing statues or reliefs, he had little to lead him to attempt them. And even had he thought of such a thing, proper materials and tools were not to be had. There was no fine marble at hand, and the difficult art of casting statues in bronze was not to be introduced west of the Atlantic until about the middle of the nineteenth century.

Out of a Quaker home in New Jersey came a "sculptress," the first American we know of who made sculptural forms—Mrs. Patience Wright, whose wax portraits of king and queen, noble lords and others set all London talking after she went there to live in 1769.

Then followed the Revolutionary War, and after it the desire to preserve in lasting monuments the forms and features of its leaders. Houdon was persuaded to leave France long enough to make a study of George Washington for a statue to be set up in Richmond, Virginia. Besides this statue and a bust of Washington copied from life, the French sculptor made busts of Franklin, Jefferson and others.

But Americans were soon to try their own skill in making likenesses of their great men. The first effort was in wood, and the first real American sculptor was William Rush, of Philadelphia, who first won fame by the figureheads he carved for well-known ships. He produced a statue of Washington in 1812. A fountain figure which he made in wood and which is called the Nymph, or Spirit, of the Schuylkill, has been reproduced in bronze and stands in Fairmount Park. Rush, one of the founders of the Pennsylvania Academy of Fine Arts, had great influence in the art life of his city. Then came John Frazee, a New Jersey stonecutter who, about 1834,

"executed without teacher or instruction" marble portrait busts of Daniel Webster and others; and Hezekiah Augur, a modest Connecticut carver, who timidly proceeded from wood to marble.

ITALY BECOMES THE GOAL FOR STUDENTS OF SCULPTURE

But we have come to the moment when young Americans, first turning to a serious study of sculpture, went to Italy for training and inspiration. Foremost among these seekers for enlightenment was Horatio Greenough (1805–52), who became a sculptor through his admiration for a statue in the garden of his father, a prosperous Boston merchant. After college the young man went to Rome to study his art. In Italy, where the ancient marbles and bronzes spoke for themselves, while Canova and Thorwaldsen declared them the only models to follow, Greenough did most of his work, although it was made for his native land. When his statue of Washington, ordered by Congress for the rotunda of the National Capitol, crossed the ocean, it appeared as a seated figure of colossal size, with only loose drapery across the knees and falling over one arm, in place of the first president's accustomed garments. The huge marble mass was too heavy for the floor, so that the statue had to be banished out of doors, where it was unfairly viewed for many years before being taken into the shelter of the Smithsonian Institution. Do not too lightly laugh at Greenough's Washington represented as Olympian Zeus, but think of it as the work of a pioneer, and remember the high purpose of the sculptor and the seven years of thought and labor spent upon the statue. If Saint Gaudens could say of the earlier sculptors, "Those men were greater than we know," shall we not pause in judging?

Another "first thing" that Greenough did was to make marble groups, one of which, The Rescue, standing on a buttress of the Capitol's east front, shows a pioneer saving his wife and child from an Indian, while their dog stands by.

Thomas Crawford, an Irish American who studied and worked in Rome, undertook three hard problems in adornment for the National Capitol. His figure of Freedom for the dome in its simplicity of line and mass is well suited to being viewed at a distance. His statues and groups for the pediment of the Senate wing, ambitiously presenting the Past and Present of the Republic, are not held together in unity of composition, but come nearer success than might have been expected from Crawford's inexperience. He also designed bronze doors for the Senate entrance.

Soon, from the studios of Americans in Italy, engulfed in an atmosphere of revived classic ideals, flowed a wealth of smoothly finished, gracefully posed maidens and youths in cold, pure marble —all too smooth, too posed, too classic. The most highly praised of them all in Europe and America was the Greek Slave by Hiram Powers, who lived in Florence from 1837 until 1873. This fair captive, with her chained hands and her air of gentle patience, was copied many times over for an admiring public, as were a number of other figures that pleased the fancy of the sculpture-starved land. Such were two appealing statues— the Lost Pleiad and the blind girl, Nydia —by Randolph Rogers. Among the best —in modern judgment far surpassing the Greek Slave—are the White Captive by Erastus D. Palmer and a Clytie by William H. Rinehart. The group of American artists in Rome included a brisk little woman, Harriet Hosmer, who was noted for such differing types as a mischievous Puck and a stately captive queen, Zenobia.

William W. Story, a scholar and a man of social gifts, in his studio in Rome created a company of large, mournful— often tragic—marble forms of women, heroines of literature: Cleopatra, the Libyan Sibyl, Medea and others. Utterly different are the small story-telling statuettes of John Rogers, usually spoken of as "Rogers groups," which were to be found in plaster in almost every American household in the Seventies and Eighties of the nineteenth century.

EARLY WORK IN PORTRAITS AND EQUESTRIAN STATUES

All of the sculptors we have mentioned made portrait busts, and most of them, portrait statues. Good and dignified monumental portrait work was done by Thomas Ball, who, like Palmer, became a sculptor through instinct and love for the art, developing with but little instruction. His Washington, made for Boston, was the first equestrian group in New England.

New York already had its bronze

SCULPTURE OF YESTERDAY AND TO-DAY

The Sun Vow, by Hermon A. MacNeil.

The Nymph of the Schuylkill, by William Rush.

The Bear-tamer, by Paul W. Bartlett.

Frog Fountain, by Janet Scudder.

Dancer and Gazelles, by Paul Manship.

Little Dear with the Tiny Black Swan, by A. S. Calder.

Jeanne d'Arc, by Anna Hyatt Huntington.

Medea, by William W. Story.

The Two Natures, by George Grey Barnard.

Photos on this page by DeWitt Ward, Philip B. Wallace and the Metropolitan Museum of Art.

Washington on horseback, finished ten years before, in 1854, by Henry Kirke Brown, who owed little to foreign influence or training. The Washington (badly placed in Union Square) was his greatest achievement and still counts as one of the best equestrian statues in America. It gives a noble impression of a great man. The very first equestrian statue made in the country, however, had been dedicated in the city of Washington one year earlier, in 1853. It was by Clarke Mills, who had never seen an equestrian statue before he made this one of metal from an old cannon. It shows General Andrew Jackson upon a horse astonishingly balanced on its hind legs. Though it is not good sculpture, we must remember that Mills built his own foundry and modeled and cast his statues himself —a true pioneer in the mechanical side of the art.

Henry Kirke Brown's bronze Washington was cast in a New York foundry and put together with great difficulty and effort. When the sculptor's young assistant climbed for the last time out of the horse's body, where, as he afterward said, he had spent more days "than Jonah did inside the whale," we may think that the hour had come when American sculpture was to step forward out of the pioneer stage. The young man, whose name Brown insisted upon placing with his own on the pedestal of the statue, was John Quincy Adams Ward (1830–1910), one of the three leading sculptors in the United States. The other two are Augustus Saint Gaudens and Daniel Chester French.

JOHN QUINCY ADAMS WARD, A LEADING SPIRIT IN THE MARCH FORWARD

J. Q. A. Ward, born in Ohio, began to model in clay while but a farmer boy in the Middle West. Ill health and a visit to Brooklyn led to his becoming a pupil in Brown's studio, where he stayed for seven years. Soon after the Washington statue was finished Ward made an independent start, his first public work being The Indian Hunter, for Central Park, New York, shown in our headpiece. He had made a trip among the Indians of the Northwest to get the right models for this group, which, standing among the shrubbery of the park, charms us with its alert and eager vitality. Success and orders came quickly. Indeed, orders for portrait statues kept Ward so busy most of his life that he found little time to give to ideal subjects.

He went to Italy to enlarge his knowledge and vision, but not to stay, believing that an artist would best serve his age by working at home. Of his many works we can name only a few—the noble figure of Washington in front of the Subtreasury Building, and the Horace Greeley, New York; statues of General Thomas and of Garfield in Washington; and a Henry Ward Beecher monument in Brooklyn. He did not hesitate to clothe the modern man in his own commonplace modern coat, trousers and boots; but he managed to make the man seem more important than his garments: to make the garments help to express the man in some degree.

When the Centennial Exposition of 1876 was held in Philadelphia and the United States began to realize what sculpture really means, J. Q. A. Ward, as president of the National Academy of Design, put much effort into making the exhibit a worthy one. And when in 1899 a splendid temporary arch to greet Admiral Dewey after his victory in Manila Bay was raised in New York, the sculptors who gave their best to make it beautiful were led by the dean of them all, J. Q. A. Ward, then president of the National Sculpture Society. His was the crowning group—Victory in her sea-chariot drawn by six spirited horses.

"THE MOST ILLUSTRIOUS FIGURE IN AMERICAN ART"

In the days of the Civil War a young man, son of a French father and an Irish mother—immigrants to the United States —was working as apprentice to a cameo-cutter in New York. Twice the lad saw President Lincoln: first, on the way to Washington; later, lying in state during the funeral journey after the assassination. To-day in the minds of many the name of Lincoln calls up the face and form of a figure in bronze standing in Lincoln Park, Chicago; for the young cameo-cutter was Augustus Saint Gaudens (1848–1907), who became in time "the most illustrious figure in American art," and whose skill and genius as a sculptor have given to the United States lasting records of some of her greatest heroes.

Study at Cooper Institute and the National Academy of Design, followed by several years in Paris and Rome, transformed the cameo-cutter into a recognized sculptor, who opened a studio in New

York in 1875. His first public commission was to make a statue of Admiral Farragut—the sturdy bronze sea captain at Madison Square, whose interesting pedestal, designed by Stanford White, the architect, and Saint Gaudens working together, introduced a new idea for the base and setting of a statue.

The years of earnest, almost unceasing work that followed brought forth rich results: the Shaw Memorial, in relief, for Boston; the Lincoln Monument, for Chicago; The Puritan, for Springfield, Massachusetts; the Adams Memorial, in Rock Creek Cemetery, Washington; the famous Sherman Statue at the entrance to Central Park, New York; and other public works, besides a number of portrait busts and reliefs. "There was no branch of his art in which he did not excel; it was an art designed in general for the flowingness of bronze rather than for reproduction within the confines of the marble block."

From the delicate portraits of children in low relief to the great forward-sweeping figures of the Sherman group, the general on his horse led on by a serious but eager winged Victory, there is a broad range, yet all show the craftsmanship of a master's hand and the creative power of a poet's mind. A proof of the greatness of his art is that in looking at his works we can forget the artist and his technique—everything but the meaning of what he has made.

Photo, courtesy of the sculptor.

The Angel of Death and the Sculptor, by Daniel C. French.

In Daniel Chester French we find an artist who seems to have skipped the introductory phases—to have become a sculptor almost without knowing it. Born in New Hampshire in 1850, the boy grew up in the country, interested in birds and animals. His genius was not discovered until one day, when he was about nineteen, he carved from a turnip a grotesque figure of a frog in clothes. He was then living near the historic and literary town of Concord, Massachusetts—a "Daniel

among the lions," cultured and kindly lions, whose homes were there. From Miss May Alcott, the Amy of Little Women, the young man had his first art lessons, and with tools borrowed from her he made his earliest attempts at sculpture.

At twenty-three the sculptor, who by way of training had had some lessons in anatomy and had spent one month in the studio of J. Q. A. Ward, modeled for the battlefield at Concord his figure of the Minute Man—a statue so original and satisfying you would hardly guess that the artist's only models were a cast of the Apollo Belvidere and himself.

DANIEL CHESTER FRENCH, WHOSE WORK COMBINES TRUTH, BEAUTY AND FORCE

A year of study at Florence, Italy, with Thomas Ball, ten years of work on commissions in America, another year of study in Paris—the centre to which all young American artists were turning—then D. C. French settled in New York.

From his studio has gone far and wide a quiet but compelling influence. Believing "that beauty and truth are acceptable to the human mind," he creates forms of beauty that speak simply and truly to all sorts of human beings. None of his works lacks dignity and force, though all have the touch of tenderness and refinement. They are "imagined simply and naturally."

In Washington are his General Cass, the group of Gallaudet with a little deaf-mute pupil, and the impressive seated Lincoln of the Lincoln Memorial; in Lincoln, Nebraska, a statue of Lincoln standing; in or near Boston his John Harvard, the John Boyle O'Reilly Monument, and the Milmore Memorial with its exquisite Angel of Death and the Young Sculptor; New York has the serene Alma Mater at Columbia University, the lovely Memory in the Metropolitan Museum, and other works. These are far from all of the fine pieces that have come from his hand. In collaboration with the sculptor of animals, Edward C. Potter, he has produced a number of groups, such as an equestrian statue of General Grant for Philadelphia, one of Washington for France, and one of General Joseph Hooker for Boston.

For sculptors in America the Columbian Exposition at Chicago in 1893 was a test that showed remarkable gain over 1876. This and the other great fairs that have been held since have opened wide gates of opportunity. Perishable and passing though much of the work for these expositions has been, it has given a message of beauty to hosts of men and women, and has introduced the sculptors to their public.

MACMONNIES, BORN WITH A SENSE OF BEAUTY IN MODELING

In the Court of Honor at the Chicago Fair stood Daniel C. French's stately but gracious statue of the Republic; and in the lagoon was the great wonder ship, the Columbian Fountain, which came to be known everywhere as the MacMonnies Fountain. Its designer, Frederick MacMonnies, was one of a number of young sculptors who had been privileged to work under the generous and inspiring leadership of Saint Gaudens. A familiar bit of work by MacMonnies is the statue of Nathan Hale in City Hall Park, New York. Some others of note are the bronze groups on the Soldiers' and Sailors' Memorial and two groups of Horse-tamers for Prospect Park, Brooklyn; the Bacchante in the Metropolitan Museum; and the winged Victory at West Point. MacMonnies seems to "possess an intuitive sense of beauty in modeling." His apparent ease is the result of knowledge and painstaking work.

It is impossible in a few words to do justice to the group of sculptors who have been adding honors to the account of the United States since 1893. We can simply give an introductory glimpse.

Paul Wayland Bartlett (1865-1925), while he worked in Paris most of his life, has left his native land a number of figures, some of unusual interest, such as the Columbus and the Michelangelo in the Library of Congress and the sculptures in the pediment for the House of Representatives at Washington; a McClellan for Philadelphia; and a General Warren for Boston. The Bohemian Bear-tamer in the Metropolitan Museum is a good example of his early work when, in his own words, he was "animal-crazy." His equestrian Lafayette, presented to France by the school children of the United States, has the honor of standing in the garden of the Louvre.

The career of George Grey Barnard, who grew up in the West, is an example of courage and high vision. Neither poverty nor hardship could ever daunt him. Michelangelo, Phidias and Rembrandt are his inspiration. He is a

dreamer who creates, always with "instinctive regard for the simplest form of plastic interpretation." His statues such as The Two Natures, The Hewer, and Maidenhood are widely known; and he has made two great groups for the Pennsylvania State Capitol.

Gutzon Borglum and his brother Solon (sons of a Danish pioneer), who, like young Lochinvar came "out of the West," have hardly been excelled in the modeling of horses, whether in such sympathetic and original records of the old West as Solon's impressionistic studies, On the Border of White Man's Land, and Stampede of Wild Horses, or such a spirited mount as Gutzon has given his statue of General Sheridan in Washington. Gutzon Borglum's group, The Horses of Diomed, is pictured on page 2703. He has made a figure of Lincoln seated on a bench, for Newark, New Jersey; a colossal head of Lincoln, in the rotunda of the Capitol at Washington; and large statues of the Apostles for the Cathedral of St. John the Divine in New York, besides undertaking other extensive projects.

Photo, courtesy of the sculptor.
Motherhood, by
Bessie Potter Vonnoh.

The changing life in the western United States is further presented in James Earle Fraser's Indian group, The End of the Trail, made for the San Francisco Exposition. It is shown on page 266. A native of Minnesota, Fraser in his boyhood studied Indians and buffaloes at close range and felt the tragedy of their losing fight. As a portrait sculptor and a designer of medals he has had great success.

From Massachusetts came another who has made sympathetic studies of the American Indian. They are beautifully modeled figures and groups by Hermon Atkins MacNeil, who took with him to Rome and Paris a great interest in the vanishing race and returned with the feeling still strong. The Moqui Runner, Primitive Chant (shown on page 6898), and The Sun Vow are among the best of his works on this motive. For the Marquette Building in Chicago he made four panels illustrating scenes in Père Marquette's life. For the McKinley Memorial in Columbus, Ohio, he made the figure of McKinley and two bronze groups, Industry and Peace. On the campus at Cornell University stands his statue of Ezra Cornell; and he designed one of the groups on the Washington Arch in New York. Larger commissions have occupied him in later years. "His work is full of delightful touches and felicitous passages."

Again we find the epic of the American Indian, told this time by Cyrus E. Dallin. In such groups as The Appeal to the Great Spirit, in Boston, and The Medicine Man, in Philadelphia, he combines "with complete naturalism the poetry of the Indian subject." To Philadelphia belongs another Indian group, The Stone Age, made in 1888 by John J. Boyle, from whose hands later came a seated Benjamin Franklin for the same city—an informal, benevolent Franklin.

In 1896 a fatal accident ended the work of Olin Levi Warner, a man gifted with a remarkable sense of the monumental in form. His portrait busts, heroic statues and ideal studies, noble in feeling and expression, give an impression of high breeding and deep-mindedness joined with eager delight in the beautiful. He made an exquisitely proportioned fountain for Portland, Oregon, and designed a set of bronze doors for the Library of Congress in Washington. Knowledge of form and monumental dignity distinguish the large athletic figures and the portrait works of Charles H. Niehaus. Among the best are: Garfield, in Cincinnati; Hahnemann, in Washington; and a bust of J. Q. A. Ward. Some of the most virile modern portrait sculpture is done by Charles Grafly, of Philadelphia, whose technique is vigorous and individual.

To set down names in classified lists is dangerous, as most of the artists included have done good things in more than one field; but we shall place them in the departments in which they seem to have reached the greatest distinction. Among the makers of portraits, then, we

shall mention William Ordway Partridge, Jonathan Scott Hartley, W. R. O'Donovan, J. H. Calverley, Mrs. Bryson Burroughs, Edmond T. Quinn, Adolph A. Weinman, Malvina Hoffman and John Flanagan.

With great sensitiveness and delicacy of feeling Herbert Adams has fashioned portrait busts of women that recall the art of the old Florentines. In some of them he has resorted to the ancient custom of introducing color or even a variety of materials. In his memorials and larger works, for example his tympanum and doors for Saint Bartholomew's Church, New York, he has achieved distinction in architectural decoration.

DECORATIVE SCULPTURE FOR THE GREAT EXPOSITIONS AND ELSEWHERE

In this field of decorative sculpture some who have contributed to the adornment of American buildings and memorials were born in other lands but were early transplanted. Among these are Philip Martiny and F. Wellington Ruckstuhl, from Alsace; J. Massey Rhind, from Scotland; Isidore Konti, a Viennese; and a gifted Italian family, the Piccirillis, who have given the benefit of fine craftsmanship to the furthering of decorative arts in America. Two of them, Attillio and Furio, are sculptors of ability. Karl Bitter (1867–1915), from Vienna, was at his best in festive decorations allowing room for some heroic exaggeration. He, like most of the other later sculptors, did notable ornamental work for the great expositions and for buildings both public and private.

Lorado Taft, of Chicago, writer, instructor and lecturer, has produced some finely composed and significant groups; Robert I. Aitken, of San Francisco, stands among the foremost in force, originality and technique; Bela L. Pratt's work is notably an expression of sentiment; and R. Hinton Perry at his best shows imagination combined with charming treatment of form. To the important class of large decorative and commemorative works Evelyn Longman Batchelder and Gertrude Vanderbilt Whitney have made valuable contributions.

In designs for fountains and other out-of-door decorative sculpture a number of artists show great skill and charm: Janet Scudder, Chester Beach, Edith Barretto Parsons, Brenda Putnam and Harriet Frishmuth, John Gregory, Karl Gruppe and others. In the handling of ornamental form Edward McCartan and Paul Manship are especially happy, giving proof of inventive power and a feeling for the rhythms of design.

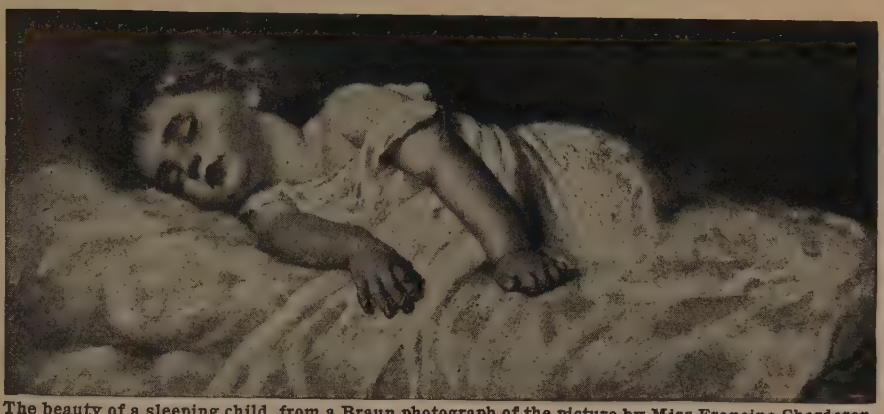
The distinct field of "figurines," or small bronzes, was first entered by Bessie Potter Vonnoh, whose little groups of tender motherhood and graceful girlhood quickly won a place for themselves. Abastenia St. Leger Eberle has taken for her *genre* the types in the streets of a great city—from little girls to old women. Manship, Jennewein and others are contributors to this attractive province—the small bronze.

Most admirable results have crowned the labors of sculptors of animal life. Of the "honest truth about horses" no one has ever told more than Edward C. Potter, although others have revealed broad knowledge and understanding in equestrian statues and elsewhere. Edward Kemeys, Frederick G. R. Roth, Eli Harvey, H. K. Bush-Brown, Augustus Lukeman, Henry Merwin Shrady, Anna Hyatt Huntington, Sally James Farnham, Charles Cary Rumsey, Edward F. Sanford, Laura Gardin Fraser and Albert Laessle are names that stand high on the roll of those who have had notable success in making animal sculptures, large and small. Of A. Phimister Proctor we tell in the story of the Canadian sculptors.

The ideal figure is a motive that appeals to most artists. A few individual figures stand out along the way. Some we have spoken of already. Two others we must add: John Donoghue's young Sophocles leading the chorus after the battle of Salamis, dated 1885; and Rudulph Evans' study of maidenhood, The Golden Hour. Among the sculptors who have produced original and beautiful conceptions of ideal themes are A. Stirling Calder, Sherry Fry, F. E. Elwell and Arthur Lee.

No work of art has life and value unless it bears some impress of the artist's own personality, but "the great artist strives to bring his personality and his work into harmony with the best that he knows of human effort," and at the same time to keep in touch with his own age and race. Toward these high attainments sculpture in the United States has been steadily moving.

THE NEXT STORY OF THE FINE ARTS IS ON PAGE 5075.



The beauty of a sleeping child, from a Braun photograph of the picture by Miss Francine Charderon.

GOLDILOCKS AND THE GOLDEN CROWN

MANY years ago there was a poor herdsman who lived with his wife and his little son in a log-cabin in a great forest. The boy had long yellow hair which shone like sunshine, and because of this he was called Goldilocks. One night he went to meet his father in the forest, and lost his way and could not get back home. Happily, it was autumn, and there was an abundance of nuts and blackberries growing on the trees and bushes, so Goldilocks did not want for food.

After wandering about for three days he got into a wild, lonely place, where the trees grew so dense that he could scarcely make his way through them. Then, however, the forest thinned out, and Goldilocks came to the shore of a blue sea. Some fishermen were dragging their fishing-smack down the beach, and one of them caught sight of Goldilocks, and cried: "What a handsome boy! Let us take him with us. We want a lad in the boat."

Having now lost all hope of finding the log-cabin in which his father and mother lived, Goldilocks was feeling very sad and lonely, and he was glad to go with the fishermen. Though they fished a long time, they caught nothing. This was most discouraging because they needed a catch.

At last an old fisherman with silver hair gave the net to Goldilocks saying: "Now you try, my lad. Perhaps you will have better luck."

Goldilocks tugged furiously at the net, and at last brought it up. No wonder it had felt heavy, for glittering in its meshes was a crown of pure gold.

"Hail, O King!" cried the old fisherman, kneeling down at the feet of Goldilocks. "It is now a hundred years ago," he said to the astonished boy, "that the last of our kings died. Having no heir to succeed him, he cast his crown into the sea and declared that his throne must remain unoccupied until some happy person won it by recovering the crown."

The fishermen at once turned their boat in toward the shore, and Goldilocks stood at the prow with the bright crown glittering on his head. News of his success resounded from ship to ship, and traveled over the sea.

On reaching his magnificent palace, which stood in the centre of a rich and noble city, Goldilocks at once sent a thousand of his best soldiers into the forest. At the end of a week they returned in triumph, bringing Goldilocks' mother and father with them, who could scarcely believe the good fortune of their son, until they saw him with a golden crown upon his head.

A TALE OF MANY LANDS

HOW BAULDOUR THE BEAUTIFUL WAITED A HUNDRED YEARS

PECOPIN was handsome and Bauldour was beautiful, and they loved each other. Pecopin was the son of the Burgrave of Sonneck, and Bauldour was the daughter of the Lord of Falkenburg.

One owned the forest; the other owned the mountain. What could be better than to marry the mountain to the forest? The two fathers came to an understanding and Bauldour was betrothed to Pecopin.

I

THE TALISMAN

This happened in April, when the whitethorn flowered to the sunshine in the forest, and a thousand charming little waterfalls made of snow and rain transformed into brooks, danced in music down the mountains. Pecopin had all the qualities of a brave and gentle knight; Bauldour was a queen in her castle, a humble and holy maiden at church, a fairy-like creature in the woods, and a good housekeeper.

It was said of her that her eyes were the sweetest ever seen. She spent most of her time at her spinning-wheel, and Pecopin went out all day hunting. He knew where the eagle had his eyrie, and the kite his nest. He could tell the trail of all the wild beasts in the forest. Only at dusk, when they went down to the drinking-places, did the animals feel quite safe. They knew that at this hour Pecopin always went to Bauldour's bower.

The day appointed for their marriage drew near. Pecopin became more joyful; Bauldour became more happy. Bauldour went on spinning in her bower; Pecopin continued to hunt in the forest.

One day as he crossed a clearing a horn sounded, and a glittering troop of noblemen came out of the thicket. The great Count Palatine was there.

"Come with us, huntsman!" he cried.

"Where are you going?" said Pecopin. "And what are you going to do that I should accompany you?"

"Young knight," replied the Count, "we are going to hunt at Heinburg a kite that destroys our pheasants; we are going to hunt at Vaugstberg a vulture that kills our young hawks; we are going to hunt at Rheinstein an eagle that slays our falcons. Come with us."

"With pleasure!" said Pecopin, for next to Bauldour he loved hunting.

The hunt lasted three days. The first day Pecopin killed the kite; the second day he killed the vulture; the third day he killed the eagle. The noblemen were jealous of the new-comer, but the Count was amazed at the feats of the young huntsman.

"Sir Pecopin," he said, "you shall have my estate of Rheinech. Come with me to receive it."

The Count was a great lord, and there was nothing to do but to obey. Pecopin sent to Bauldour a letter in which he sadly announced that the Count had compelled him to go. "But do not let this trouble you, my sweet lady," he added at the end of the letter, "I shall be back next month."

The Count was so delighted with Pecopin that after some time he said: "Pecopin, I am sending an embassy to the king of France, and I have chosen you as my ambassador because of your knightly renown."

Pecopin went to Paris, and the French king was also pleased with him, and taking him one morning by the hand, he said: "I want some noble and well-spoken lord to take a message for me to Spain, and I have chosen you as my ambassador because of your great intelligence."

Again the marriage had to be put off while Pecopin set out for Spain.

At Granada the Moorish ruler received him very kindly, and when Pecopin went to say good-bye, his host said: "We must indeed say good-bye, my handsome young Christian knight, for you must start at once for Bagdad."

"For Bagdad!" cried Pecopin.

"Yes," said the Moor; "for I cannot sign the treaty with the king of France without the consent of the Caliph, the Commander of the Faithful. I must send someone of consideration, and I have chosen you as my ambassador because of your handsome face."

When you are among the Moors you must go where the Moors want you to go. So Pecopin went to Bagdad, while Bauldour went on spinning.

There he had an adventure. An old negress gave him a talisman in the shape of a great turquoise, saying: "This is sent

by a princess who loves you and whom you will never see. So long as you wear it you will remain young. When you are in danger of death, touch it and it will save you. It is the pledge of a great sacrifice in the manner of its coming to you, and also of its passing out of your keeping."

Pecopin knew nothing of the princess, for his thoughts were ever with Bauldour. Still he put the ring on his finger and then almost forgot it. Now, this princess was the favorite daughter of the Caliph of Bagdad. She had watched the young knight from behind the barred windows of the women's quarters and had fallen in love with his fairness and strength. But the Caliph was very angry that she should have fallen in love with a Christian knight.

Taking Pecopin by the hand, he led him to the top of a high tower, and said: "Young knight, the Count sent you to the king of France, because of your knightly renown; the king of France sent you to the ruler of Granada because of your great intelligence; the ruler of Granada sent you to the Caliph of Bagdad because of your handsome face; and I, because of your knightly renown and your great intelligence and handsome face, send you to death!"

As he said the last word the Caliph pushed Pecopin from the top of the high tower.

As Pecopin fell through space his last thought was of Bauldour. He put his hand on his heart, and, without knowing it, he touched the talisman

II

A NIGHT'S HUNTING

On touching the magic turquoise Pecopin felt as if he were being carried along by wings.

He no longer fell: he soared. If he came to a mass of cloud, to his great joy he found that he could fly above it. If he met a wind, he did as he had seen the hawks do, and lo! he was master of its strength. He continued to fly all through the night, and at break of day the invisible hand which upheld him put him down on a lonely shore on the edge of the Arabian Sea.

For a long time Pecopin wandered about, vainly endeavoring to return to Falkenburg. Sometimes he went barefooted, sometimes he walked in sandals. He rode on the ass, the horse, the mule, the camel, the zebra and the elephant. He voyaged on all kinds of boats, and encountered all sorts of winds. He was sold as a slave in one country, and made a king in another. Several times he was shipwrecked, but he always escaped and never did he cease to yearn for home.

At the end of five years Pecopin was still seeking for Bauldour, and one day he found himself in the Forest of the Lost Tracks. No one who enters the Forest of the Lost Tracks ever finds a way out of it, and Pecopin, feeling that all was over, threw himself face downward on the ground, crying out: "I shall never see Bauldour again!"

"Yes, you will!" said someone by his side.

Pecopin sprang up. He found himself face to face with an extraordinary old nobleman clad in a magnificent hunting dress. His eyes shone like black diamonds out of a wrinkled face, and he was thin and bent with extreme old age, but his manner was gracious and pleasant.

"What do you want with me?" cried Pecopin.

"To take you to Bauldour," said the old huntsman, with a strange smile. "Spend this one night hunting with me, and at break of day I will put you down by the gate of Falkenburg."

"Willingly would I do so if I could, for that is my heart's desire, but I am worn out with walking," said Pecopin. "I am dying with thirst and hunger. I could not even mount a horse, and to hunt is beyond my power."

"Drink this," said the old huntsman.

Scarcely had Pecopin taken the mouthful from the flask which the huntsman gave him when all his powers returned. He was again strong, and alert, and eager.

"Lead on!" he exclaimed. "I will hunt all night with you if I can see Bauldour in the morning!"

"Hunt's up!" cried the old huntsman, turning toward the thicket. "Hunt's up!"

A troop of knights, dressed like princes and mounted like kings, came out of the underwood and ranged themselves in profound silence about the old huntsman. It was now dark night, but the place was lighted up by two hundred grooms clad all in black, carrying two hundred torches. A vast pack of hounds of all kinds was

led, yelping and straining at the leash, to the old huntsman, together with two splendid horses.

"Take which one you will," he said to Pecopin.

Pecopin mounted a superb steed; the old huntsman did the same. And away they all went like the wind.

Putting his hunting-horn to his lips, the old huntsman blew a terrific blast that rolled out upon the midnight air like thunder, and at the tremendous sound the forest lit up with thousands of extraordinary lights which were reflected in the dark face of the sky.

Then a great black mist fell upon everything, and Pecopin rocked and swayed along in the darkness in a strange, violent, supernatural gallop that amazed and frightened him.

Now and then, when the mist lifted, he caught a glimpse of an enormous stag with great antlers fleeing in front of the wild huntsmen. Then he saw in the distance the broad, moonlit sea. He tried to stop his horse, but it would not stop; he tried to throw himself out of the saddle, but when he made a movement to dismount, his feet were gripped as with iron bands. He looked down and saw that his stirrups had become fierce living things grasping him tightly and holding him close to the saddle.

The wind became hot and stifling. Pecopin gazed round and saw that he was galloping through India. A quarter of an hour afterward he was chilled to the bone. The air was dim with snow, and the hard, frozen ground rang with the sound of the innumerable hoofs of the horses.

Suddenly Pecopin's horse stopped short, and all the sounds around him ceased. He found himself alone at the open gate of a colossal building pierced with rows of lighted windows.

While he was wondering what to do his horse leaped through the gate and carried him into an immense hall. Here the old huntsman and his companions were sitting round a great table, on which, in an enormous dish, was the stag with spreading antlers, roasted, blackened and smoking.

"Now you must sup with us, Pecopin, after our great hunt," said the strange old huntsman.

But as he spoke a cold white gleam of daylight came through the eastern windows, and a cock crowed. The great building seemed to totter and crash around him, and in the faint light of dawn Pecopin saw the black forms of his companions stream upward through the air. A cold wind, keen as a spur, blew upon his face, and with a cry he fell from his horse to the ground. When he regained consciousness he found himself alone by the gate of an old castle. He looked at it and shouted with joy. It was the Castle of Falkenburg.

Like a flash of lightning Pecopin climbed the castle stairs. In the twinkling of an eye he reached the fifth story of the castle, where Bauldour used to sit, and he heard the sound of her spinning-wheel through the closed door. But as he burst open the door and entered the room he found there only a poor, wrinkled, withered figure crouching by the window, her eyes bent over a spinning-wheel.

He looked about him in bitter disappointment, for he had expected his betrothed to be waiting with eager arms. But there was not even a sign that Bauldour was near at hand; the room and everything in it was so old. The spinner looked at him strangely.

"Where is Bauldour—my beautiful Bauldour?" said Pecopin to her. "Bauldour, with eyes the sweetest ever seen, and hair like floss silk. I have come back at last to marry her!"

The strange little withered figure tottered across the room, and with a faint cry threw herself on Pecopin's breast. It was Bauldour. She was a hundred and twenty years old! All through the long years she had waited for Pecopin, and never had she despaired of his return.

The night's hunting which Pecopin had spent with the wild huntsman had lasted a hundred years, though it had seemed only a few moments, but owing to the magic talisman Pecopin himself was still as young and handsome as ever.

What should he do now? He still loved Bauldour, but he could not make her younger. At last, remembering the princess' words, he threw away the talisman; and then, aging a hundred years in a single moment, he came back to his sweet lady and married her. And they lived together, quietly but happily, at Falkenburg. But the whitethorn never flowered to the sunshine in April again, and the little waterfalls sang no more.

THE SAD HEART OF A LITTLE TROTT

This pathetic little story is told by the French writer André Lichtenberger.

A GREAT sorrow has overwhelmed the heart of Trott.

No one loves him any more at all. Well, perhaps, just a very little still; but it is not as it used to be. And when one has been petted and loved tremendously, that is not enough. Trott has a heart like lead; it is just as if he had eaten too much apple-tart. And to-day things have gone worse than ever.

This morning Trott was taking his lesson with his governess, and he was grumpy. Although as a rule he is very polite, he said a word to her which was not quite proper. And papa, who was coming in at that moment, heard it. Trott was not allowed to have any dessert. Alas! there was whipped cream that day.

After luncheon Trott hurried away from the room to stretch his legs. He rushed angrily out of the dining-room and slammed the door. His baby sister woke up and uttered a dismal howl. Mamma said: "Trott is insufferable!"

That evening, when he returned from his walk, it was almost dark. At such a time one has a rather melancholy feeling, and it is nice to be petted. Trott thought he would go and find his mother, and sit in his usual place in his own little chair beside her couch. He found the place occupied by little Lucy in her cradle.

Mamma was so busy crooning and making pretty faces to the baby that she gave Trott scarcely more than one hasty little kiss. Trott felt very cold and bruised about the heart. He went to the window and sat there quite alone, watching the night's slow descent over the garden, and feeling very hurt.

And now papa comes in. He takes a seat close to baby-girl, and says over his shoulder to Trott: "Hello, my boy! Are you still sulking?" And then he begins chatting with mamma about baby, who is clutching his finger and making little noises.

Trott hides himself in his corner. His wretchedness grows still deeper. It is certain now, absolutely certain, that no one loves him any longer. Hitherto when he was naughty, they scolded him a little, and then it was over; they embraced him more than ever afterward, so that he felt it was very good to have been scolded. But to-day they have scolded him severely and have not caressed him at all afterward. What shall he do? Oh, to think how they had once loved him—a great deal, ever so much! And when he had been ill—ah, they had loved him tremendously then! Suppose he were to fall ill now! Perhaps . . .

Trott gets up and stands on his chair.

It is an idea. Baby has been carried away. Nobody is looking. Father and mother are talking in a low tone. With a quick movement Trott gets up and stands on his chair. He leans both hands on the back and gives a strong push. The chair falls over with a frightful crash, and Trott rolls on the floor into the middle of the room.

Mamma utters a loud scream. Papa rushes toward Trott and hurriedly examines his forehead. But mamma wishes to have him to herself; she snatches him up, takes him upon her lap, hugs him, caresses him, calls him all manner of dear and tender names. Trott cries with joy and with pain, for he has a big bump on his forehead.

"How did you manage to fall over, poor little man?"

Trott cannot reply. He is sobbing too fast. At last he manages to blurt out, between two big sobs: "I—did it—on purpose!" Father and mother look at each other in bewilderment. What can the boy mean? What is to be said to that?

One must never tell a lie. Although it is difficult, with so many tears running away from his eyes, Trott tells the whole truth. He did it on purpose because he wanted to know if mamma and papa really did love him any longer. He knew, of course, that they could not love him, being old, as they loved his sister, who was new. But he thought that perhaps they could still love him a little bit. He wanted to find out. And now he is quite happy, he is very glad, although . . . The torrent of tears increased in violence.

Mamma passes a loving arm around Trott's neck and gently mops his burning eyes. Papa holds the little hands in his. They both smile, but it is a very tender smile. The music of their sweet and gentle words begins to soothe Trott's heart. He is told something, too, which appears very grand and wonderful in his ears. It is quite plain that he is loved just as much as ever, quite as much even as little Lucy. They love her because she is so weak and helpless. He is a fine, big, strong boy, and he must watch over baby sister, guard her and help her, because she has no strength. It is Trott's duty to look after this baby. And they love him quite the same, most certainly, every bit as much.

Papa lifts up his little son in his arms, presses a big kiss on each cheek, and asks, as he looks him in the face: "Now, are you comforted at last, my little man?"

And Trott replies, his eyes still red, but with a smile on his lips: "Yes; but, all the same, I am very glad I made such a big bump."

THE FABLES OF ÆSOP THE SLAVE

THE DOVE AND THE ANT

ONE day an ant, drinking beside the stream, fell into the water, and the current was fast washing her away. A dove, pitying her distress, picked a twig from a neighboring tree and dropped it into the water. The ant was able to

crawl upon this twig, which presently lodged against a little point at the edge of the stream, and so she escaped with her life.

A short time afterward a man with a gun attempted to shoot the dove; but just as he had taken aim and was about to fire, the ant crept up the back of his boot and bit his leg so hard that he gave a sudden start, which caused him to miss his aim, and the dove flew safely awav.

One good turn deserves another.

THE DOG IN THE MANGER

ONE day a large dog jumped into a manger full of hay, and finding that it made a nice bed, lay down there to sleep. Presently an ox who was very hungry came up and wanted to eat the hay.

As soon as the dog heard him it sprang up and barked furiously. The ox again tried to get at the hay, but the dog threatened to bite him if he came near.

The ox then said: "Why will you not let me eat my hay? It is of no use to you, for you cannot eat it yourself."

"That doesn't matter," snarled the dog. "If I can't eat it myself, I won't let anyone else eat it either."

Selfishness is one of the ugliest faults we can have.

THE NEXT STORIES ARE ON PAGE 5069.

FRENCH—AT THE HOTEL

First line, French; second line, English word; third line, as we say it in English.

Nous sommes à l'hôtel.
We are at the hotel.
We get to the hotel.

Le gérant nous salue.
The manager us salutes.
The manager greets us.

La femme de chambre nous montre nos chambres.
The woman of room us shows our rooms.
The maid shows us our rooms.

Nous lui demandons son nom.
We of her demand her name.
We ask her her name.

Elle répond: "Annette."
She replies: "Annette."
She answers: "Annette."

Bébé a bien sommeil.
Baby has much sleep.
Baby is very sleepy.

Maman dit: "Embrasse-moi, bébé."
Mamma says: "Embrace me, baby."
Mamma says: "Kiss me, baby."

Bientôt nous entendons un petit cri.
Soon we hear a little cry.
Soon we hear a little cry.

Jeannette court à la porte.
Jenny runs to the door.
Jenny runs to the door.

Une petite fille est là.
A little girl is there.
A little girl is standing there.

Jeannette la conduit à maman.
Jenny her conducts to Mamma.
Jenny takes her to Mamma.

Elle pleure.
She cries.
She is crying.

Maman la console.
Mamma her comforts.
Mamma comforts her.

Elle a perdu sa bonne.
She has lost her nurse.
She has lost her nurse.

Nous lui montrons des images amusantes.
We to her show some pictures amusing.
We show her some funny pictures.

Quelqu'un frappe à la porte.
Someone knocks at the door.
Someone knocks at the door.

Maman crie: "Entrez!"
Mamma cries: "Enter!"
Mamma calls out: "Come in!"

La porte s'ouvre.
The door itself opens.
The door opens.

Une jeune femme entre.
A young woman enters.
A young woman comes in.

C'est la bonne de la petite fille.
It is the nurse of the little girl.
It is the little girl's nurse.

La bonne tend les bras.
The nurse extends the arms.
The nurse holds out her arms.

La petite fille court à elle.
The little girl runs to her.
The little girl runs to her.

Nous crions tous: "Bonsoir!"
We cry all: "Good evening!"
We all call out: "Good night!"

LA CHANCE DE JACQUES LE SIMPLE

This is a French translation of the story told in English on page 4756.

JACQUES LE SIMPLE était le meilleur tisserand de soie de Spitalfields, mais il n'avait pas la moindre idée de la valeur de la monnaie. S'il sortait avec beaucoup d'argent dans la poche il était sûr de le dépenser, soit pour ses amis, qui avaient l'habitude de l'assiéger, soit pour des choses absolument inutiles.

Jacques le Simple n'en était pas seulement là, mais il payait tout ce que les marchands lui demandaient pour n'importe quel article, et, comme tout le monde connaissait ses points faibles, Jacques le Simple était volé quand il allait faire des achats.

Il était tout aussi bête en cas de vente, car il acceptait n'importe quel prix en échange de ses marchandises, peu soucieux des sommes plus ou moins absurdement insignifiantes qu'on lui offrait. Aussi sa femme avait-elle l'habitude de faire les achats et les ventes dont ils avaient besoin.

Un jour, cependant, Jacques le Simple résolut de faire une vente par lui-même. Il prit un paquet de belles soieries et les vendit à un négociant pour mille francs. Mais, voyant un homme avec un âne, il l'interpella: "Cet âne me serait bien utile, en voudriez-vous mille francs?"

L'homme fut naturellement tout prêt à le vendre pour un si bon prix. Bientôt Jacques le Simple découvrit que l'âne était très entêté et qu'il ne voulait pas se laisser diriger.

"Combien donneriez-vous de cette bête?" dit-il à un marchand de quatre saisons.

"Elle serait chère à douze francs," répondit le rusé marchand.

Jacques le Simple prit les douze francs et les échangea contre un sac de pommes de terre nouvelles. Mais le sac était lourd, et Jacques fut bientôt fatigué de son nouveau marché. Aussi le laissa-t-il à une poissonnerie pour un maquereau.

Sa femme se fâcha en apprenant comment il avait dépensé les mille francs, mais, en ouvrant le poisson, elle y trouva une perle d'une remarquable beauté.

"Tiens! ceci doit bien valoir des milliers de francs!" s'écria-t-elle.

"Vous voyez bien, ma chère," dit gaîment Jacques le Simple, "j'ai dépensé un misérable billet de mille francs pour acheter un poisson contenant un riche bijou, et cependant vous dites que je n'ai aucune idée de la valeur de l'argent!"

THE NEXT FRENCH STORY IS ON PAGE 5126.

CAN A FIRE LIGHT ITSELF?

ONE of the saddest disasters that can happen to a farmer is for a stack of new hay to catch fire and burn away to ashes. This is a thing that has happened ever since haystacks have been made, but until some years after Pasteur had made his wonderful discoveries about microbes it could never be understood.

Hay, and even partially dried grass, can be set on fire by a tiny microbe which commonly occurs on them. It is known as the *Bacillus subtilis,* a little rod-shaped organism standing out from practically all other bacteria by its amazing powers of resistance to damp heat. We know how milk is boiled in order to kill the microbes in it which would otherwise turn it sour very quickly in hot or thundery weather; but we can boil the hay bacillus for ten or twenty minutes and it will come out of the ordeal as fresh as ever!

All microbes grow very rapidly in suitable conditions. Scientists say that one microbe might produce in twenty-four hours millions and millions of others. The *Bacillus subtilis,* when growing rapidly in damp hay, produces a great amount of heat. As this heat has no means of getting away in a closely packed haystack, such intense heat may be generated that the stack takes fire, and is destroyed.

The reason of these mysterious fires—vaguely put down to what is called spontaneous combustion—has only become known in our time as the result of our knowledge of bacteriology. Farmers, however, have always known how necessary it is to have their hay thoroughly dry before making it into stacks. They knew the result, but not the cause.

So the hay, when mown, is spread on the ground until it is thoroughly dry. While it is drying the farmer is always anxious, because he knows that if rain falls, and the hay has to be stacked when slightly damp, there will always be danger of these fires. Dry heat kills the tiny spores of the hay microbe, and even the living microbe cannot grow if it has no moisture, so that the dry stack presents no danger from fire.

In order to keep a current of air blowing through the stack farmers often build their stacks round bunches of straw, pulling up the straw as the stack rises. In this way a series of passages, or chimneys, as they are called, is arranged in the stack through which the air is constantly blowing and drying the hay. Dry air is also pumped into stacks through pipes by means of small electric motors.

The hay microbe is undoubtedly the cause sometimes of starting brush fires,

though in many fires of this kind the cause is thought to be the bottles left on the grass by picnic parties. The curved glass is believed to act like a burning-glass, and to concentrate the sun's rays on the dry grass, setting it afire.

Hay is not the only thing that can catch fire by itself without being lighted by a match. Under certain conditions the same thing may happen to coal.

WHY DO WE SEE A BLACK SPOT IN THE SKY AFTER LOOKING AT THE SUN?

The retina, or curtain, or sensitive plate, at the back of the eye never needs changing. We can see one picture after another, day after day, and year after year. But it is possible to work this screen too hard; for it is a living thing. It is just because it is alive that it is able to recover itself, and, so to speak, make itself fresh again for every new picture that we see with it. A photographic plate *sees*, as we may say, because certain chemical compounds that are upon it are changed by the light. The retina of the eye *sees* in the same way, but, because it is alive, it has the power of making afresh from moment to moment the particular kind of stuff the light acts on. But if we stare hard at any light so intense as the sun itself, then at that spot of the retina where the light falls all the reserve supply of this sensitive stuff is used up. And now, if we turn our eyes somewhere else, that particular part is useless for the moment: it is blind; it sees nothing. But if it sees nothing, whereas all the retina around it sees light, that gives us the notion that we see a black spot—that is to say, a spot from which no light comes. But in a second or two this wonderful living screen recovers itself, makes a fresh supply of the stuff light acts on, and the black spot disappears.

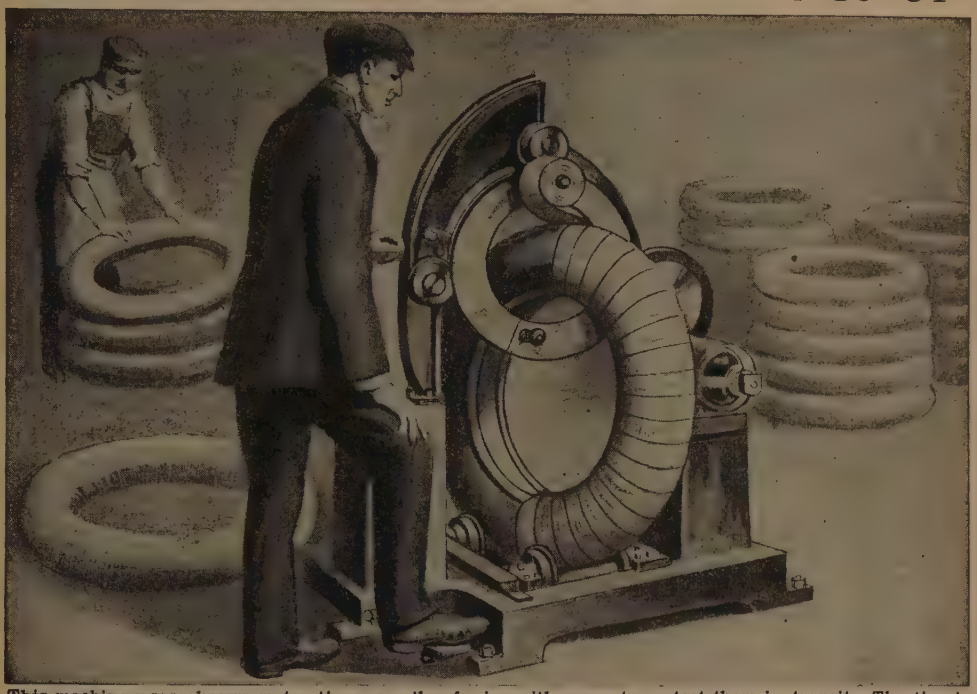
HOW DID THE BREECHES BIBLE GET ITS NAME?

The curious name *Breeches Bible* is often given to the English, or Genevan, Bible of 1560, which was translated principally by Puritans at Geneva. The word rendered "aprons" in Genesis III.7 in the Authorized Version of 1611 is, in the Genevan Bible, translated "breeches." Other versions of the English Bible have odd names because of some mistake or curious translation. In what is known as the *Printer's Bible*, Psalm CXIX.161 is misprinted, "Printers have persecuted me without a cause," "printers" being substituted for "princes." Tyndale's New Testament of 1538 is often called the *Wife's Bible* because II Corinthians X.II is rendered, "Think on his wife," intended for "Think on this wise." The second edition of the Genevan Bible, 1562, is called the *Whig Bible*, because in the beatitudes we read, "Blessed are the place makers" (instead of peacemakers), and the political opponents of the Whigs said they made lucrative posts for their friends. Another Bible is called the *Servant Bible*, because Genesis III.1 is misprinted, "Now the servant (instead of serpent) was more subtle than all the beasts of the field." In the *Judas Bible*, Matthew XXVI.36 is given as "Then cometh Judas (instead of Jesus) and his disciples." The *Pagan Bible* is an old version that contains a woodcut of Mount Olympus and the heathen gods. In the *Vinegar Bible*, printed at Geneva in 1717, the word "vinegar" is substituted for "vineyard" in the parable in Luke XX. In the *Bugges Bible*, published in 1551, Psalm XCI.5 is rendered, "Be not afraid of any bugges by night." This is not a misprint. "Bugges" is simply the old English word for "bogey" or "bugbear." A somewhat similar instance occurs in the *Treacle Bible*, 1568, where the word "treacle" is substituted for "balm" in the verse "Is there no balm in Gilead?" Jeremiah VIII.22. In the Douay Version of 1609–10 this same word is translated "rosin," and so that edition is called the *Rosin Bible*.

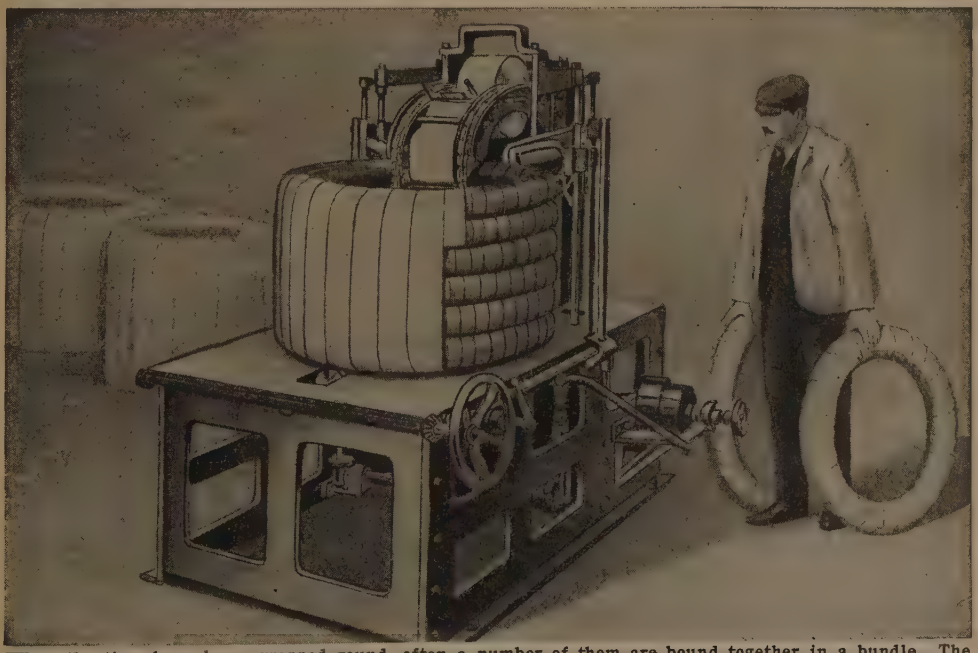
WHY DOES BOILING WATER FEEL COLD ON OUR HAND?

Though we can gain no knowledge except through our senses, we know that they are very likely to deceive us. The general rule about this is that the senses deceive us least when they are concerned with something we are accustomed to and they deceive us most when there is something unusual about the thing we are feeling or seeing. They work best with things that excite them neither very little nor very much. In the skin of the hand there are special arrangements for feeling both hot and cold. It is a very interesting fact that when the sensation of heat is extremely acute the brain is deceived for a moment or two, and makes us feel as if we were touching something cold. No one can explain how this mistake arises, but this question is well worth thinking about.

THE MACHINE THAT WRAPS THINGS UP



This machine wraps heavy motor tires or coils of wire with paper to protect them in transit. The tire is placed in position on feed rolls, and a circular shuttle at the top, which has a gate opened by a knob, admits the tire. This shuttle is revolved, and as it goes round it carries with it a coil of paper which it winds onto the tire. The tire itself revolves so that the whole of it becomes wrapped.



When the tires have been wrapped round, often a number of them are bound together in a bundle. The tires are placed on top of one another, and a shuttle with a roll of paper is carried through and round the bundle on endless chains. At the same time the bundle is revolved horizontally on the table by feed rolls. So the paper is wrapped round and round, as in the case of a single tire in the first machine.

WHY DOES A TUNING-FORK SOUND LOUDER WHEN IT TOUCHES WOOD?

The fact that the sound is louder must mean that more power, in the shape of sound-waves, is reaching our ears. First we have to ask ourselves whether the thing on which the tuning-fork rests is making the additional sound. The answer is: Certainly not. We have to explain what happens without for a moment suggesting that any new sound is being made anywhere, even though a greater volume of sound does certainly reach our ears.

We are right when we say that the thing on which the tuning-fork rests actually does resound, meaning that it throws the sound which reaches it back toward our ears. The proper name for it, because it resounds, is a *resonator*. The sound from a tuning-fork, like the light from a candle, flows out in all directions. We, of course, hear only what comes in one direction, and that is really only a very small part of the whole. The resonator increases the amount of sound that reaches our ears, but it *makes* nothing. Just as much as it increases the sound in our direction, so it diminishes the sound in the direction beyond the resonator. It is an air-wave reflector.

WHY CANNOT WE SEE VERY SMALL THINGS WITH OUR NAKED EYES?

If the retina, the curtain at the back of the eye, were a perfectly smooth and continuous thing like a piece of glass, we should be able to see much smaller things than we do. But it is a living thing made of living cells, and each of these can see only one thing at a time. They are a certain size, and take up a certain amount of room, and there is a certain amount of space between them. Thus, the rays of light from a thing must be spread out enough to cover at least two of these cells —perhaps more—before we can expect to see two things separately. Of course much depends on brightness. If a thing is very bright indeed, perhaps it will be seen by one cell of the retina. Thus, a star may be seen, though the pencil of light from it is very narrow, while a tiny speck of something under our eyes which sends a pencil of light just as big cannot be seen without a microscope. A large number of the stars we see are really double stars. The telescope shows us this by throwing the light on to more cells than one of the retina of the eye.

WHAT IS IT THAT MAKES WRINKLES IN OLD PEOPLE'S FACES?

The wrinkles of elderly people are due to a slow process of wasting in the skin. It is a curious thing that we can, by good sense and cheerful minds, control the process of getting old in everything that matters, and especially in our brains. But we cannot in the case of our skin. The skin gets shriveled and puckered. Especially do we notice wrinkles in people who have become rather thin. This means that a great deal of fat has disappeared from under the skin, so that it is too loose for the body and falls into wrinkles. In extremely old people the skin gets so thin and so much of it wastes away, that all the wrinkles disappear.

WHAT DO WE MEAN BY ANCIENT REGIME?

This is an expression used to denote "the old order of things." Originally it was applied by the French Revolutionists to the old Bourbon monarchy which they had overthrown, and was used as a term of reproach or contempt.

WHAT IS HUMBLE PIE?

To "eat humble pie" means to take a lower position, or to demean one's self. The expression is really a pun on *umble* or *umbels*, the heart, liver and other organs of the deer. In olden days, after the hunt, the lord of the castle and his household dined on the choice venison while the *umbles* were made into a pie for those of lower degree. To eat umble pie, therefore, was a confession of social inferiority.

WHAT IS A DARK HORSE?

This is a term used in racing to describe a horse which has been entered for a race, but about which very little is known to the general public.

The term is also employed nowadays in politics, especially at a political convention, to denote a candidate for the nomination, generally one who is not well known, brought forward at the last minute.

WHAT DO SCIENTISTS MEAN BY THE TERM MILLIBAR?

A millibar is the thousandth part of a bar, which is the unit of atmospheric pressure now used by meteorologists. The bar is equal to the pressure of 29.531 inches of atmosphere at 32° Fahrenheit in latitude 45°.

THE NEXT WONDER QUESTIONS ARE ON PAGE 5081.

A POEM ABOUT THE VIKINGS

THIS poem suggests something of the fierce spirit of the Vikings—warriors of the sea whose home was in Scandinavia. When a Viking leader died, his body was placed in a boat, which, with full sail set and a fire lighted, was sent drifting out to sea. As the fire consumed the vessel and the body of the dead, it was supposed that the leader made his entrance into Valhalla, the land of the gods. In The Sea-King's Burial the tragic interest is the greater from the fact that this king is not dead when he sets sail for Valhalla, but is voluntarily going forth to his fate. He is named after one of the gods in Norse mythology. The poem was written by Charles Mackay, a well-known British poet and journalist who was born in Perth in 1814 and died in London in 1889.

THE SEA-KING'S BURIAL

"MY strength is failing fast,"
Said the sea-king to his men,
"I shall never sail the seas
Like a conqueror again,
But while yet a drop remains
Of the life-blood in my veins,
Raise, oh, raise me from my bed;
Put the crown upon my head;
Put my good sword in my hand,
And so lead me to the strand,
Where my ship at anchor rides
Steadily;
If I cannot end my life
In the crimsoned battle-strife,
Let me die as I have lived,
On the sea."

They have raised King Balder up,
Put his crown upon his head;
They have sheathed his limbs in mail,
And the purple o'er him spread;
And amid the greeting rude
Of a gathering multitude,
Borne him slowly to the shore—
All the energy of yore
From his dim eyes flashing forth—
Old sea-lion of the North—
As he looked upon his ship
Riding free,
And on his forehead pale
Felt the cold, refreshing gale,
And heard the welcome sound
Of the sea.

They have borne him to the ship
With a slow and solemn tread;
They have placed him on the deck
With his crown upon his head,
Where he sat as on a throne:
And have left him there alone,
With his anchor ready weighed,
And his snowy sails displayed
To the favouring wind, once more
Blowing freshly from the shore,
And have bidden him farewell
Tenderly,
Saying: "King of mighty men,
We shall meet thee yet again,
In Valhalla, with the monarchs
Of the sea."

Underneath him in the hold
They had placed the lighted brand:
And the fire was burning slow
As the vessel from the land,
Like a stag-hound from the slips,
Darted forth from out the ships.
There was music in her sail
As it swelled before the gale,
And a dashing at her prow
As it cleft the waves below;
And the good ship sped along,
Scudding free;
As on many a battle morn
In her time she had been borne,
To struggle, and to conquer
On the sea.

And the king with sudden strength
Started up, and paced the deck,
With his good sword for his staff,
And his robe around his neck.
Once alone, he raised his hand
To the people on the land;
And with shout and joyous cry
Once again they made reply,
Till the loud, exulting cheer
Sounded faintly on his ear;
For the gale was o'er him blowing
Fresh and free;
And ere yet an hour had passed,
He was driven before the blast,
And a storm was on his path,
On the sea.

"So blow, ye tempests, blow,
And my spirit shall not quail;
I have fought with many a foe,
I have weathered many a gale;
And in this hour of death,
Ere I yield my fleeting breath—
Ere the fire now burning slow
Shall come rushing from below,
And this worn and wasted frame
Be devoted to the flame—
I will raise my voice in triumph,
Singing free;
To the great All-Father's home
I am driving through the foam,
I am sailing to Valhalla,
O'er the sea.

"So blow, ye stormy winds—
  And, ye flames, ascend on high;
In easy, idle bed
  Let the slave and coward die!
But give me the driving keel,
Clang of shields and flashing steel;
Or my foot on foreign ground,
With my enemies around!
Happy, happy, thus I'd yield,
On the deck or in the field,
  My last breath, shouting 'On
    To victory.'
But since this has been denied,
They shall say that I have died
  Without flinching, like a monarch
    Of the sea."

And Balder spoke no more,
  And no sound escaped his lip;
And he looked, yet scarcely saw
  The destruction of his ship,
Nor the fleet sparks mounting high,
Nor the glare upon the sky;
Scarcely heard the billows dash,
Nor the burning timber crash;
Scarcely felt the scorching heat
That was gathering at his feet,
  Nor the fierce flames mounting o'er him
    Greedily,
But the life was in him yet,
And the courage to forget
  All his pain, in his triumph
    On the sea.

Once alone, a cry arose,
  Half of anguish, half of pride,
As he sprang upon his feet,
  With the flames on every side.
"I am coming!" said the king,
"Where the swords and bucklers ring,
Where the warrior lives again,
Where the souls of mighty men,
Where the weary find repose,
And the red wine ever flows.
  I am coming, great All-Father,
    Unto Thee!
Unto Odin, unto Thor,
And the strong, true hearts of yore—
  I am coming to Valhalla,
    O'er the sea."

THE REAPER

Wordsworth might have called his poem The Singer instead of The Reaper, for he is interested in the woman's song more than in her task. Although the act of singing at work generally indicates a happy mood, yet the melancholy of the song is insisted upon by the poet.

BEHOLD her, single in the field,
  Yon solitary Highland lass!
Reaping and singing by herself;
  Stop here, or gently pass!
Alone she cuts and binds the grain,
And sings a melancholy strain;
O, listen! for the vale profound
Is overflowing with the sound.

No nightingale did ever chaunt
  More welcome notes to weary bands
Of travellers in some shady haunt
  Among Arabian sands:
No sweeter voice was ever heard
In spring-time from the cuckoo-bird,
Breaking the silence of the seas
Among the farthest Hebrides.

Will no one tell me what she sings?
  Perhaps the plaintive numbers flow
For old, unhappy, far-off things,
  And battles long ago:
Or is it some more humble lay,
Familiar matter of to-day?
Some natural sorrow, loss, or pain,
That has been, and may be again?

Whate'er the theme, the maiden sang
  As if her song could have no ending;
I saw her singing at her work,
  And o'er the sickle bending.
I listened till I had my fill;
And as I mounted up the hill
The music in my heart I bore
Long after it was heard no more.

THE LAME BROTHER

Mary Lamb, the sister of Charles Lamb, had a very sad life, and was subject to fits of insanity. Her brother Charles devoted himself to watching over and protecting her. Their literary labors together did much to brighten and make useful the life of the sister, who, though greatly inferior to her brother in literary gifts, had still a talent for pleasant and simple verse. Their elder brother, John, had been lamed in his youth, and these verses by Mary Lamb were, no doubt, suggested by his infirmity.

MY parents sleep both in one grave;
  My only friend's a brother.
The dearest things upon the earth
  We are to one another.

A fine stout boy I knew him once,
  With active form and limb;
Whene'er he leaped, or jumped, or ran,
  Oh, I was proud of him!

He leaped too far, he got a hurt,
  He now does limping go—
When I think of his active days,
  My heart is full of woe.

He leans on me, when we to school
  Do every morning walk;
I cheer him on his weary way,
  He loves to hear my talk:

The theme of which is mostly this,
  What things he once could do.
He listens pleased—then sadly says,
  "Sister, I lean on you."

Then I reply, "Indeed you're not
  Scarce any weight at all—
And let us now still younger years
  To memory recall.

"Led by your little elder hand,
  I learned to walk alone;
Careful you used to be of me,
  My little brother John.

"How often, when my young feet tired,
  You've carried me a mile!
And still together we can sit,
  And rest a little while.

"For our Master never minds,
  If we're the very last;
He bids us never tire ourselves
  With walking on too fast."

A CHRISTMAS CAROL

THERE'S a song in the air!
There's a star in the sky!
There's a mother's deep prayer
And a baby's low cry!
And the star rains its fire while the Beautiful sing,
For the manger of Bethlehem cradles a king.

There's a tumult of joy
O'er the wonderful birth,
For the virgin's sweet boy
Is the Lord of the earth.
Ay! the star rains its fire and the Beautiful sing,
For the manger of Bethlehem cradles a king.

In the light of that star
Lie the ages impearled;
And that song from afar
Has swept over the world.
Every hearth is aflame, and the Beautiful sing
In the homes of the nations that Jesus is King.

We rejoice in the light,
And we echo the song
That comes down through the night
From the heavenly throng.
Ay! we shout to the lovely evangel they bring,
And we greet in his cradle our Saviour and King.

—JOSIAH GILBERT HOLLAND.

THE CHILDREN'S HOUR

This is one of the most charming of the minor poems by H. W. Longfellow, and it pictures for us with real feeling one of the greatest joys of life: the story-telling hour with the little ones. The story of the Bishop of Bingen, mentioned in the seventh verse, is told at length in Southey's poem of Bishop Hatto.

BETWEEN the dark and the daylight,
When the night is beginning to lower,
Comes a pause in the day's occupations,
That is known as the Children's Hour.

I hear in the chamber above me
The patter of little feet,
The sound of a door that is opened,
And voices soft and sweet.

From my study I see in the lamplight,
Descending the broad hall stair,
Grave Alice, and laughing Allegra,
And Edith with golden hair.

A whisper and then a silence:
Yet I know by their merry eyes
They are plotting and planning together
To take me by surprise.

A sudden rush from the stairway,
A sudden raid from the hall!
By three doors left unguarded
They enter my castle wall!

They climb up into my turret
O'er the arms and back of my chair;
If I try to escape, they surround me;
They seem to be everywhere.

They almost devour me with kisses,
Their arms about me entwine,
Till I think of the Bishop of Bingen,
In his Mouse-tower on the Rhine!

Do you think, O, blue-eyed banditti,
Because you have scaled the wall,
Such an old moustache as I am
Is not a match for you all?

I have you fast in my fortress,
And will not let you depart,
But put you down into the dungeon
In the round-tower of my heart.

And there will I keep you forever,
Yes, forever and a day,
Till the walls shall crumble to ruin,
And moulder in dust away.

HOW TO WRITE A LETTER

The following verses by Mrs. Turner may be commended as the best possible advice to those who find it difficult to write a letter—young and old alike. Mrs. Turner died in 1846 at the age of seventy-two. She wrote many little poems for children, such as The Cowslip and The Daisy.

MARIA intended a letter to write,
But could not begin (as she thought) to indite;
So went to her mother with pencil and slate,
Containing "Dear Sister," and also a date.

"With nothing to say, my dear girl, do not think
Of wasting your time over paper and ink;
But certainly this is an excellent way,
To try with your slate to find something to say.

"I will give you a rule," said her mother, "my dear,
Just think for a moment your sister is here,
And what would you tell her? consider, and then,
Though silent your tongue, you can speak with your pen."

GOD SENDS LOVE TO YOU*

There are few stories in the Old Testament more beautiful than that of Naaman and the little Jewish maid Ruahmah. It tells us how that young captive contrived to teach her master about the love of God. Henry Van Dyke (1852-1933), the American poet, wrote a beautiful play, entitled The House of Rimmon, which deals with this subject, and Ruahmah is therein made to sing the following beautiful song:

ABOVE the edge of dark appear the lances of the sun;
Along the mountain ridges clear his rosy heralds run;
The vapours down the valley go,
Like broken armies, dark and low.
Look up, my heart, from every hill
In folds of rose and daffodil
The sunrise banners flow.

Oh, fly away on silent wing, ye boding owls of night!
Oh, welcome, little birds that sing the coming-in of light!
For new, and new, and ever new,
The golden bud within the blue;
And every morning seems to say:
"There's something happy on the way,
And God sends love to you!"

*From The House of Rimmon, copyright, 1908, by Charles Scribner's Sons.

SEVEN TIMES ONE

Seven Times One was written by Jean Ingelow, and is the first in a series of poems called The Songs of Seven. It tells the thoughts of a little girl upon her seventh birthday.

THERE'S no dew left on the daisies and clover,
There's no rain left in heaven;
I've said my "seven times" over and over,
Seven times one are seven.

I am old, so old, I can write a letter;
My birthday lessons are done;
The lambs play always, they know no better;
They are only one times one.

O Moon, in the night I have seen you sailing
And shining so round and low;
You were bright—ah, bright!—but your light is failing;
You are nothing now but a bow.

You Moon, have you done something wrong in heaven,
That God has hidden your face?
I hope, if you have, you will soon be forgiven,
And shine again in your place.

O Columbine, open your folded wrapper,
Where two twin turtle-doves dwell.
O Cuckoo-pint, toll me the purple clapper
That hangs in your clear green bell.

And show me your nest, with the young ones in it,
I will not steal them away;
I am old, you may trust me, linnet, linnet,
I am seven times one to-day.

THE KITTEN AND THE FALLING LEAVES

Although the subject of this poem by William Wordsworth is rather commonplace, the poet has treated it with a delicacy that makes it interesting alike to young people and grown-ups. We should like to share the kitten's game.

SEE the kitten on the wall,
Sporting with the leaves that fall,
Withered leaves—one—two—and three—
From the lofty elder-tree!
Through the calm and frosty air
Of this morning bright and fair,
Eddying round and round they sink
Softly, slowly: one might think,
From the motions that are made,
Every little leaf conveyed
Sylph or fairy hither tending,
To this lower world descending,
Each invisible and mute,
In his wavering parachute.
—But the kitten, how she starts,
Crouches, stretches, paws, and darts!
First at one, and then its fellow,
Just as light and just as yellow;
There are many now—now one—
Now they stop and there are none:
What intenseness of desire
In her upward eye of fire!
With a tiger-leap half-way
Now she meets the coming prey,
Lets it go as fast, and then
Has it in her power again:
How she works with three or four,
Like an Indian conjuror;
Quick as he in feats of art,
Far beyond in joy of heart.
Were her antics played in the eye
Of a thousand standers-by,
Clapping hands with shouts and stare,
What would little Tabby care
For the plaudits of the crowd?
Over happy to be proud,
Over wealthy in the treasure
Of her own exceeding pleasure!

THE BURIAL OF THE LINNET

Mrs. Ewing, who lived from 1842 to 1885, was in her day an extremely popular writer for the young, and some of her stories are still in circulation. She also wrote poetry, of which the following is an example, but she is better remembered for her stories of everyday life.

FOUND in the garden dead in his beauty—
Oh that a linnet should die in the spring!
Bury him, comrades, in pitiful duty,
Muffle the dinner-bell, solemnly ring.

Bury him kindly, up in the corner;
Bird, beast, and goldfish are sepulchred there.
Bid the black kitten march as chief mourner,
Waving her tail like a plume in the air.

Bury him nobly—next to the donkey;
Fetch the old banner, and wave it about;
Bury him deeply—think of the monkey,
Shallow his grave, and the dogs get him out.

Bury him softly—white wool around him,
Kiss his poor feathers—the first kiss and last;
Tell his poor widow kind friends have found him:
Plant his poor grave with whatever grows fast.

Farewell, sweet singer! dead in thy beauty,
Silent through summer, though other birds sing.
Bury him, comrades, in pitiful duty,
Muffle the dinner-bell, mournfully ring.

TRY AGAIN

These familiar lines by William Edward Hickson have been as often quoted as some of the finest poetry in our language, although, of course, they are only rhymes for children. It is the idea here, rather than the form in which it is expressed, that makes the words worthy of quotation. Hickson wrote on educational matters, and lived from 1803 to 1870.

'TIS a lesson you should heed,
Try again;
If at first you don't succeed,
Try again;
Then your courage should appear,
For if you will *persevere*,
You will conquer, never fear,
Try again.

Once or twice, though you should fail,
Try again;
If you would at last prevail,
Try again;
If we strive, 'tis no disgrace
Though we do not win the race;
What should we do in that case?
Try again.

If you find your task is hard,
Try again;
Time will bring you your reward,
Try again;
All that other folk can do,
Why, with patience, may not you?
Only keep this rule in view,
Try again.

LITTLE VERSES FOR VERY LITTLE PEOPLE

ONE, two, three, four, five,
Once I caught a fish alive,
Six, seven, eight, nine, ten,
But I let him go again.

Why did you let him go?
Because he bit my finger so.
Which finger did he bite?
The little one upon the right.

POOR Dicky's dead! The bell we toll,
And lay him in the deep, dark hole.
The sun may shine, the clouds may rain,
But Dick will never pipe again!
His quilt will be as sweet as ours:
Bright buttercups and cuckoo flowers.

I LOVE the little flowers;
I love the little plants;
I love the little butterflies,
And I'm not afraid of ants.
But I do not love the bumblebee,
And the waspies really frighten me!

OH, my pretty cock! Oh, my handsome cock!
I pray you, do not crow before day,
And your comb shall be made of the very beaten gold,
And your wings of the silver so gray.

DANCE, little baby, dance up high,
Never mind, baby, mother is by;
Crow and caper, caper and crow,
There, little baby, there you go;
Up to the ceiling, down to the ground,
Backwards and forwards, round and round;
Dance, little baby, and mother will sing,
With the merry coral, ding, ding, ding!

I'M going out a-hunting,
I'm going to have some fun,
But there will be no danger,
Although I have a gun.

Storks, pigeons and canaries,
I'll bring home without fail;
For I'll load my trusty gun with salt,
And shoot them on the tail!

YOU see, merry Phillis, that dear little maid,
Has invited Belinda to tea.
Her nice little garden is shaded by trees,
What pleasanter place could there be?

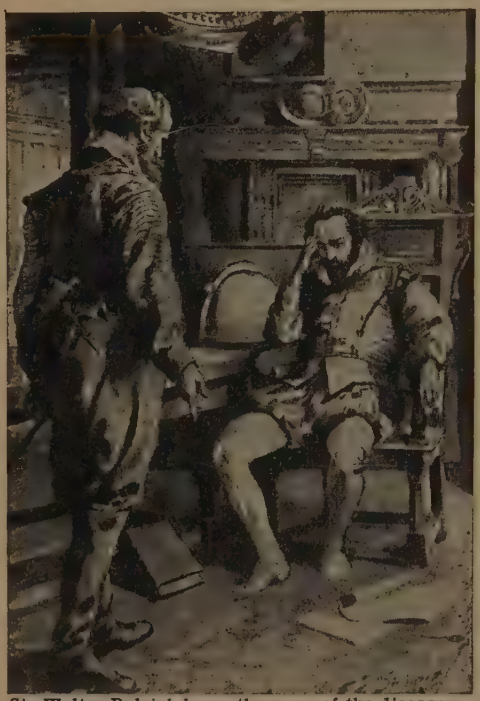
There's a cake full of plums, there are strawberries too,
And the table is set on the green;
I'm fond of a carpet all daisies and grass,
Could a prettier picture be seen?

A blackbird (yes, blackbirds delight in warm weather),
Is flitting from yonder high spray.
He sees the two little ones talking together,
No wonder the blackbird is gay.

RUB-A-DUB-DUB,
Three men in a tub;
The butcher, the baker,
The candlestick-maker;
And they all jumped out of a rotten potato.

DIDDLEY-DIDDLEY-DUMPTY,
The cat ran up the plum-tree,
Half-a-crown
To fetch her down,
Diddley-diddley-dumpty.

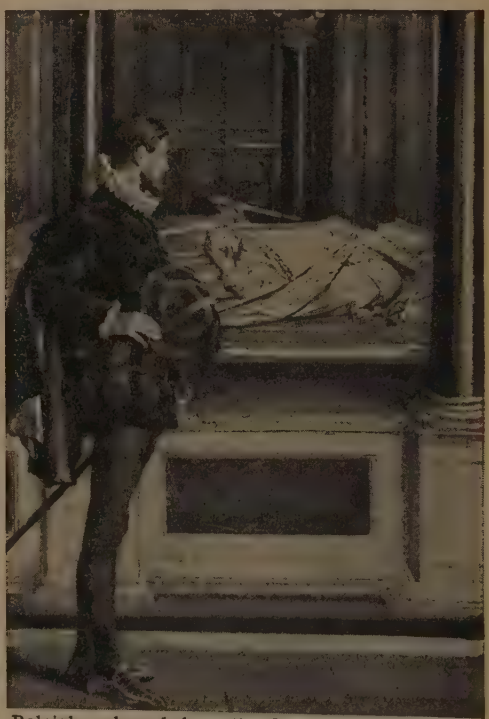
EPISODES IN RALEIGH'S LIFE



Sir Walter Raleigh hears the news of the disappearance of his colony.

Raleigh lays down his cloak for Queen Elizabeth to walk on.

The founder of the British Empire is taken to the Tower to languish and die.

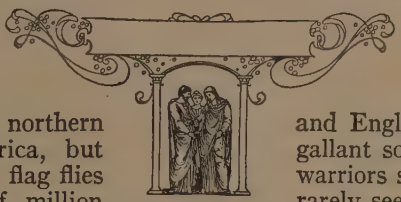


Raleigh, released from the Tower, at the tomb of Queen Elizabeth.

Sir Walter Raleigh writing while a captive in the Tower.

THE ELIZABETHAN SEA-DOGS

FOUNDERS OF THE BRITISH EMPIRE



ALEXANDER and Cæsar were familiar with much of Asia, with Europe and with the northern coastal fringe of Africa, but no more. The British flag flies over four and a half million square miles of Africa, into which neither Greek nor Roman ever dared to venture. It waves over three million square miles in Australasia and Oceania, realms undreamed of by the ancients. It floats over nearly four million square miles in America, which was a second continent unguessed at by the legions of Greece and Rome.

The deeds of a few heroic men founded this wide empire, an empire of more than a quarter of the land surface of the world, whose heart is a group of islands in a misty sea, themselves but a four-hundredth part of the land surface of the globe.

The British Commonwealth embraces well over 13 million square miles of territory, with about 450 million people.

It is appropriate to liken the British Empire to her own spreading oak. And the acorn which grew into the mighty tree may be said to have been planted in the reign of Queen Elizabeth. The sixteenth century was a great and stirring period in world history. Great times breed great men, and England was blessed with gallant sons who became ocean warriors such as the world has rarely seen. In the years from 1532 to 1580, less than half a century, were born eight men whose names will never die. Sir John Hawkins, Sir Martin Frobisher, Sir Humphrey Gilbert, Sir Francis Drake, Sir Richard Grenville, Sir Walter Raleigh, Captain John Smith and Henry Hudson were the great sailors who may be said to have founded the British Empire.

With whom the dream of empire dawned it is difficult to say. Sir Walter Raleigh, Sir Humphrey Gilbert, Sir Philip Sidney, all the great men about Elizabeth's court, talked of it, wrote of it, and planned to find it true. And with high courage they dared perils greater than any known to-day.

THE HEROES WHO FEARED WHAT WAS NOT REAL

Those heroes did not fear the terrible Spaniards. They did not fear the sea and its storms and icebergs. They did not fear enterprises in lands where the people were strange and savage and all the conditions appal-

ling. But they did fear the unreal: they were afraid of the perils which never, never were. All these grand fellows doing such marvels in their tiny rotten ships were convinced of the existence of demons, witches and supernatural monsters. A navy of Spanish war galleons could not have stayed the course of Francis Drake, but an army of saints could not have made him disbelieve in witchcraft on the seas and on the land.

It is not cowardly to acknowledge fears; it is heroic to overcome them, and that is what all these wonder men did. The witches of which Shakespeare writes in Macbeth; the enchantments of Prospero in The Tempest;

"... the Cannibals that each other eat,
The Anthropophagi, and men whose heads
Do grow beneath their shoulders,"

of whom Othello discourses, were as real to Elizabethan scholars and men of action as wireless and electrons are to us.

In point of time Sir John Hawkins was the first of the great mariners, for he was born in 1532 at Plymouth, Devonshire. His taste for the sea came naturally, for his forefathers had been shipowners and captains. His first daring adventure came when he sailed down the African coast, robbed the Portuguese slavers, and then smuggled the captured blacks into the Spanish colonies in the New World. This was a challenge to Spain with a vengeance. And it is small wonder that two ships he sent to trade in Seville were seized by the Spaniards.

But Elizabeth lent him a ship, and his friends came to his aid. He repeated his voyage to the African and American coasts. On his third attempt his cousin, Francis Drake, was with him in the Judith. Hawkins boldly sailed into Vera Cruz, the port of Mexico, and claimed he had been driven in by bad weather. The Spaniards pretended to believe him, but when their strong fleet arrived they attacked Hawkins. Only two of the English ships escaped—the Judith and Hawkins' own vessel, the Minion. For some years Hawkins remained at home, but he sent out several expeditions. With the danger of a Spanish attack approaching, he was created a rear-admiral, and fought against the Great Armada.

Elizabeth knighted him for his services and gave other proofs of her favor. In 1590 she sent him out to catch the Spanish treasure fleet off the coast of Portugal. He missed the flotilla and had to return empty-handed. Then occurred one of the amusing clashes which endeared the queen to her rough-and-ready seaman. Hawkins told Elizabeth that he had failed, and in his own defense quoted from the Bible: "Paul doth plant, Apollo doth water, but God giveth the increase." Elizabeth looked at him in amazement, then burst into laughter and exclaimed: "'S death! This fool went out a sailor, but has come home a divine!"

Five years later this staunch old seadog accompanied Drake on a treasure-hunting expedition to the West Indies. This met with little success. And from it Sir John Hawkins never returned, for he died at sea off Porto Rico that same year.

Before we leave Sir John Hawkins we must recall that it was he, not Sir Walter Raleigh, who brought the potato to England from Virginia. What Raleigh did was to cultivate potatoes regularly for the first time in England and Ireland.

Sir Martin Frobisher was the next hardy son of the sea who "followed the gleam" of empire. He was born in Yorkshire in 1535. When Martin was about ten years of age his uncle, Sir John York, sent him on a voyage to Guinea. That was the beginning of an adventurous life.

Frobisher Brings Back the Magic Narwhal's Tusk

Frobisher's ambition was to find the Northwest Passage to China and India. For years he met with discouraging rebuffs, but in 1576 the Earl of Warwick came to his assistance. With two tiny barks and a pinnace Frobisher sailed for the ice-bound seas. The pinnace was lost and one of the little ships deserted, but Frobisher continued on his way. He reached Frobisher Bay, and later Butcher's Island, where natives captured five of his men. All he brought back from this trip was a lump of ore supposed to contain gold, and the tusk of a narwhal. The tusk he presented to Queen Elizabeth, who was delighted with her present. In those days a narwhal tusk was supposed to have magic properties.

The gold ore encouraged the queen to give more help to Frobisher. He headed two more expeditions to the Far North. But besides some geographical knowledge little was gained. His next years were

SIR RICHARD GRENVILLE ORDERS THE MASTER GUNNER TO SINK THE REVENGE

SIR HUMPHREY GILBERT TAKES POSSESSION OF NEWFOUNDLAND IN 1583

spent in the service of his queen. For his part in the defeat of the Armada he was knighted. Many a sailor looks forward to the day when he will be able to settle down on land. Sir Martin Frobisher was no exception. But he was not satisfied with placid country life. When Sir Walter Raleigh offered him command of a fleet fitted out to harry the Spanish treasure ships, Frobisher went gladly. And he returned with a rich prize. He was wounded at Fort Crozon and died at Plymouth in 1594.

The gallant Sir Humphrey Gilbert, courtier, man of law, warrior and admirable legal administrator, was the next hero. He and Raleigh were sons of the same mother, who had been twice married. Gilbert was the elder by thirteen years, having been born in 1539, while Raleigh came into the world in 1552. Poor Devonshire gentry of decayed fortunes, they both had an admirable university education, and Gilbert, forsaking law for arms, rendered notable services in many directions before fulfilling his heart's desire to try to found an English colony "in Cathay."

THE DEATH OF THE DISCOVERER OF NEWFOUNDLAND

Raleigh was with his brother in the company, but ill fortune, dissensions, and a disastrous encounter with a strong force of Spanish off Cape Verde sent the expedition home in ruin. Gilbert spent six years in poverty, and complained that he had to sell the clothes off his wife's back.

In 1583, with four little craft, he steered west again, and at the end of seven weeks entered the harbor of St. John's, Newfoundland. With an enthusiasm matching Balboa's when he took possession of the Pacific for Spain, Gilbert claimed the new land for England. On August 5, 1583, the British Empire was founded in the island for whose discovery Henry VII had paid Cabot ten pounds.

Gilbert turned homeward on August 20, in his 10-ton ship, the Squirrel. A great gale arose on the afternoon of September 9. A companion ship passed near the Squirrel, and the crew saw Gilbert calmly seated on the heaving deck, one of his beloved books in his hands. He looked up from his reading to say, "We are as near to heaven by sea as by land." In that serene faith he went to his doom, for the ship soon foundered.

THE BATTLES AGAINST THE SPANIARDS FOR THE FREEDOM OF THE SEAS

But it was the peerless Drake who was the greatest hero of them all. To sap the tyrannical Spaniard's strength, to sink his ships, to seize his wealth, to make the ocean safe for English craft upon their lawful occasions—this was the mission to which he consecrated himself.

Crowndale, near Tavistock, in Devon, gave Drake birth in the year 1540, but Kent was his nursery, for it was to Chatham that his father took him. The father had a sort of minor chaplaincy in the navy, and his home, when not at sea, was an old hulk in the dock. There young Francis drank deep of the traditions of the sea, and as a mere stripling himself went forth into the unknown, apprenticed to the owner of a craft trading to France and Holland, who, at his death, left his beloved assistant the little ship.

In this Drake traded into strange waters on his own account, till the threat of Spain to seize all English ships in the Channel caused him to sell out and join his uncle, the future Sir John Hawkins, in an expedition to a port on the Spanish Main. The English, storm-beaten and in distress, were promised friendship by outnumbering Spaniards in port, but were treacherously attacked and forced to flee with only two of their five ships saved.

THE LOST SHIPS WHICH WERE ENGAGED IN A SHAMEFUL TRADE

We can the more readily reconcile ourselves to that loss from the fact that the English cargo was flesh and blood, a consignment of negro slaves brought from Africa for sale to the Spaniards. Hawkins was the first English sailor to engage in this unholy traffic. He thought it no wrong. Nobody thought it wrong. There was precedent for it in the Bible, in Greece, in Rome, in every empire and nation that ever existed; and John Hawkins, one of the most formidable fighting sailors that ever lived, was a slave-trader unashamed.

We hear no more of Drake in this hideous traffic in human lives. He was a merciful and God-fearing man. His father had taught him to regard the Creator as a personal God, ever present with him, to whom to turn in time of trouble.

But Drake, though so cheery and gay-hearted, had all the gloomy and terrible

superstitions of his time. He believed strange lands and strange seas to be the abode of demons. He thought fog and mist to be the direct work of Satan against him. He believed that demons and holy spirits were ever about him, contending for his soul. He believed in sorcery and enchantments, as did all the brightest minds of that age of genius and credulity.

But these beliefs never deterred this man of stout heart and great courage; he fought down the imaginary demons and he ever prayed God to enable him to frustrate the designs of Satan.

Sir Francis Drake first sees the Pacific Ocean.

DRAKE ATTACKS THE SPANIARDS

No fears of the unearthly deflected him from his pursuit of the Spaniards who were making the seas impossible for freedom. He had a practical way of repaying them in full for injuries done to himself and his race. Such a method we see in his amazing adventure, with two small vessels and seventy-five young men, on what we now call the Isthmus of Panama.

There he attacked the great Spanish town of Nombre de Dios, the port into which the Spaniards poured their treasure of gold and silver and precious stones from the New World mines for transport to Spain. One fine night in the summer of 1572 Drake and two boat-loads of men suddenly fell on the town, threw its guns into the sands, dashed into the citadel, and burst open a store of silver bars which reached to the roof. Drake, however, led the way toward another repository, where gold untold was guarded.

Sir Francis Drake makes a hurried call at Panama.

The alarm was general now, and the English were heavily outnumbered. A great storm broke, ruining their armament, and Drake fell weak from a wound in the thigh. Still he urged on his men. "I have brought you to the mouth of the Treasure-House of the World; blame nobody but yourselves if you go away empty."

The seamen replied that his life was dearer to them than all the wealth of the Indies—for they still thought America to be India. They bore him away to safety, and in a

few weeks he was up and doing, planning to waylay the mule train which crossed the isthmus with treasure for the city he had nearly looted.

Here we have two examples of the pious nature of this extraordinary man.

Native Indians, who hated the Spaniards, were to be his guides, but before he would let them serve him on this affray of piracy he made them "adopt the Protestant faith," burn their idols, and learn the Lord's Prayer by heart. Then forth he went in the name of England!

It was on this march that, balked by tropical vegetation, he ascended a high tree to look out. It was a moment of magic in his life. There he saw the Atlantic at his back, and before him the wide Pacific Ocean; and there, in that spirit of devotional exaltation which was part of his nature, he "besought Almighty God of His goodness to grant him life and leave to sail once in an English ship in that sea." Then he took from the caravan what gold and silver and precious stones he could, in such quantity that two tons which it was impossible to carry away had to be buried on the spot. Drake's magnificent voyage round the world began, we remember, simply in a foray against the Spaniards, with a view to injuring their shipping and decreasing their treasure; and what was intended to be an out-and-home cruise became a world voyage by accident.

After beating his way through the Strait of Magellan—a voyage only some 370 miles long, but occupying three weeks of constant anxiety and terror—he emerged into that ocean which he had prayed he might sail. He was now caught by a storm which blew him over six hundred miles to the southeast of Cape Horn, the southernmost point of South America.

Drake's reply was to return thanks to God for the storm as a gracious sign from Heaven to lead him to the great discovery that America did not extend to the South Pole, but that there was a seaway from the Atlantic into the Pacific without the necessity of facing the terrors of the Strait, "the haunt of demons."

He fought and pillaged ships so astonishingly along the Pacific seaboard that he felt it unwise to return by the way he had come, lest he should meet inconveniently powerful Spanish ships on the way back. He therefore light-heartedly attempted to find and sail that Northwest Passage which other gallant men had been trying to reach from England.

THE FIRST SEA CAPTAIN TO SAIL ROUND THE WORLD

That failing, he cheerfully faced a voyage home across the Pacific, a trip of twenty thousand miles in a sort of fishing smack well gunned and manned. And he did the voyage without mishap, by way of China and the Cape of Good Hope—the first English keel in those waters, and himself the first captain to sail round the world. He brought home treasure enough to ransom kings.

Boys and girls who are studying Latin will be interested in the following little story about Drake. Before the sailing of the Armada from Spain, the Spanish king sent this letter in Latin to Elizabeth:

"Te veto ne pergas bello defendere Belgas;
Quæ Dracus eripuit nunc restituantur oportet;
Quas pater evertit jubeo te condere cellas;
Religio Papæ fac restituatur ad unguem."

Freely translated, these lines mean: "I forbid you to interfere to defend the Netherlands in this war. It is fitting that what Drake seized should now be restored. I order you to rebuild the chapels that your father overthrew. See to it that the religion of the Pope be restored to the last jot."

To these lines Elizabeth wrote the short answer:

"Ad Græcas, bone rex, fiant mandata kalendas."

This means: "Good king, your order will be carried out at the Greek kalends." By which Elizabeth meant "Never."

But Drake lived to play the foremost part in the defeat of the Armada, and to "singe the King of Spain's beard," as he used to call his desperate operations. wherever a hostile fighting ship could be found to face him.

After Drake had seen the Spanish fleet in full flight he was so jubilant that he sent a merry dispatch to Queen Elizabeth. The dispatch contained one word "Cantharides." But that word was the scientific name of an insect called familiarly the Spanish Fly. The queen saw the joke and was mightily pleased with the joker.

Drake's career ended on the scene of one of his greatest exploits, in the sea off Nombre de Dios, where he was seized

with fever, sickened, and on January 28, 1596, as one of his contemporaries said, "quietly in his cabin he yielded up his spirit to his Creator."

How England was enriched with knowledge from west and east

He had been mainly instrumental in saving England from Spain, in making the seas safe for the English ships. He had enriched us with treasure and knowledge of West and East. A single capture of his from the East Indies opened English eyes to the value of the East, and prompted the formation of that company which led to English mastery of India itself.

In one respect Drake was more fortunate than some of his great contemporaries. He was in high honor with Queen Elizabeth, as indeed was only right, and his countrymen followed the royal example. On his return home from his epoch-making voyage round the world the queen thought fit to order his ship the Golden Hind to be preserved as a "monument of his own and his country's glory." But after about a hundred years the famous vessel had to be broken up.

How sir richard grenville turned the tables on his foes

We come now to a tale that stirs the blood of all those who admire courage. Sir Richard Grenville was the leading figure.

A Cornishman, born about 1541, Grenville was the son of a man who sailed and sank for England, and himself followed suit in perhaps the most dramatic fight ever seen on the ocean. A proud fierce man he was, of the sort necessary for the ungenerous age, when one English ship had to multiply itself by the skill and valor of its captain and crew into the might of a dozen.

Grenville played a part in the pioneer voyages, as his charter said, "for the discovery of sundry rich and unknown lands"; he was associated with Gilbert and Raleigh; and he sought, without finding, the lost colony sent by Raleigh. On the way home he showed his exceptional mettle, his astonishing audacity.

A Spanish ship tried to capture him. Grenville liked nothing better than such an enterprise. He captured his would-be captor! Having fought her to a standstill, he set out to take possession. He had no boats with which to board her, so he and his men made use of a raft of old sea-chests, which fell to pieces just as they reached the enemy. They brought the Spaniard home!

The fight of fights, however, was that which followed a swoop by fifty-three Spanish ships upon a little English fleet of sixteen ships which were taking in water at Flores in the Azores, and had a tragic toll of sick men aboard. Lord Howard, the admiral, rightly decided to retire while he might, and gave orders to Grenville to follow him.

The fierce fight of the revenge against overwhelming odds

Either he could not or he would not. At any rate, he left his departure too late, and in the little Revenge, in which Drake had helped to defeat the Armada, he passed out into the enemy midst, and was becalmed, the wind taken from his sails by the towering ships of Spain.

No matter how the figures be minimized, twenty of those fifty-three Spaniards were warships and fifteen of them fought with the little Revenge. The pulse leaps even to-day as we read the narrative. All the evening and all the night this one small ship fought till she had but twenty men left, most of them wounded.

He desired the master gunner to sink the ship, and the master gunner said "Aye, aye." But there were some who had wives and children, and they pleaded that, after such a fight as the world had never seen till now, they might yield and live to battle another day. The dying Grenville mournfully consented, and he died upon a hostile deck while the little Revenge went down to be lost evermore in the sea. The story of that fearful engagement is recorded for all time in the grandest ballad Tennyson wrote. The poem, which will be found on page 4739, is taken from Raleigh's writing and merely turns to rhyme the noble prose of that great master of the English tongue.

A hero is born into the raleigh family

We should keep a warm place in our hearts for the memory of Sir Walter Raleigh—warrior, explorer, historian and poet. Raleigh was born in Devonshire in 1552. The little Walter was a born hero, and loved to haunt the beach at Budleigh, there to feast his mind on stories of strange lands and strange peoples across the wide waters, poured into his willing ears by bold sailors who were resting in the little town.

Born to an adventurous life, Raleigh had talent for scholarship also, and we find him, when only sixteen years of age, a student at Oxford University, after he had done well at the schools round about his home. He stayed for a year at Oriel College, and then, at seventeen, he started upon his career of daring.

He went to France, where he fought in the Huguenot army and saw several battles. He remained abroad five years, and it is thought he was there during the frightful massacre on St. Bartholomew's Eve, and witnessed horrors which possibly prompted him to denounce religious persecution, as he did in later years.

He never flinched from shedding blood when he thought that severe measures were necessary. A rebellion sprang up in Ireland, and he went there in search of new adventures. He had by this time followed up his experiences in France by making a voyage with Sir Humphrey Gilbert, and by taking a part, it is believed, in the wars in the Low Countries. He was therefore a well-trained soldier when he went to Ireland in 1580 to help to put down a rebellion.

Some six hundred Spaniards and Italians had landed in Ireland and had encouraged the Irish to rebel against England. They had garrisoned a fort at Smerwick. When they were conquered, Raleigh, ordered to punish them, executed every one of them. That seems a terrible crime in our day, but it was deemed then quite the right thing to do.

During this campaign Raleigh became the friend of Edmund Spenser, the great poet, and afterward succeeded in having him introduced at the English court. Meanwhile Raleigh, though he had once or twice appeared at the court of Elizabeth, had not yet been recognized there. After the Irish adventure, however, he was sent to London with a report of the battle. There the Earl of Leicester, who was at this time a favorite of Queen Elizabeth, befriended him, and he was soon greatly favored by the queen.

How Queen Elizabeth Walked over the Robe of Sir Walter Raleigh

Queen Elizabeth was at this time nearly fifty years of age; Raleigh was not yet thirty. He was tall and handsome, with dark, luxuriant hair and a complexion like that of a Spanish beauty. He was graceful and active, and a man of great physical power, known to be as brave as a lion; he was a charming poet, a man of much learning, and gifted with fiery eloquence. He had courtly manners, and was always well dressed in the rich fashion of the time.

What wonder, then, that he should win the heart of the vain, though able, queen? The story of their first meeting is well known. The queen, on leaving her palace, had found a muddy puddle lying before her. Raleigh, who saw her distress, instantly stripped off the rich velvet cloak which he wore and spread it before her, so that she walked dry-shod over the mud. Very soon Raleigh became prime favorite of the queen, and she showed him many favors. She allowed him to levy taxes upon wines and woolen cloths; she made him warden of the royal mines in Cornwall and Lord Lieutenant of that county. She knighted him, and he was elected a member of Parliament. For five years Raleigh had no rival at court, and in this time he acquired great riches, and as liberally as they came he spent them on the great ventures of the time.

The First Members of the Household called the British Empire

It was in 1584 that he fitted out, at his own cost, an expedition to explore the American coast north of Florida. The queen agreed to the plan, though she could not bear to let Raleigh himself go. The sailors of his fleet had good fortune, and took possession for Raleigh of a great area of land which Queen Elizabeth, the "Virgin Queen," herself named Virginia.

The next year Raleigh sent out a strong fleet with people who were to settle down in the new land—the first colonists ever sent out by England. They settled on Roanoke Island, now in North Carolina. Up to that time Great Britain did not own a foot of land beyond her own borders. Raleigh's scheme gave her the foundation of her colonial empire. The venture was not a success. Several ships were sent out. One hundred men remained for a year and then were brought home. Next, fifteen men were left, but they disappeared. After that a party of 150 colonists, of whom twenty-five were women and children, was dispatched. The governor left them on the island of Roanoke while he went back to England for supplies. It was four years before he could return, and then he found the island deserted. The whole party, in-

cluding his little granddaughter, the first white child born of English parents in the country, had disappeared, and were never heard of again.

Raleigh then gave up the effort. It had cost him $200,000 out of his own pocket, a sum equal to about a million dollars at the present day, and, so far as he was concerned, the scheme was a failure. But it gave the people of Great Britain a new idea. The importance of overseas possessions began to be realized, and there grew up the idea of a large fleet of ships, both for trade and for war, which has since made that country the greatest naval power the world has seen.

POTATOES GROWN IN IRELAND AND TOBACCO GROWN IN ENGLAND

A cloud now appeared upon the horizon. A new court favorite appeared in the person of the Earl of Essex, and Raleigh, who could not tolerate a rival in the favor of his sovereign, quitted the court and went to Ireland. His visit was important to Ireland. The queen had given him an estate there, and in his garden in the town of Youghal, of which he was for some time mayor, he planted the first potatoes ever grown in that country. These had been brought back, with some tobacco, by some of the men whom he had sent to the New World. Potatoes have proved of immense importance to the whole of Europe, but to no other country are they more vital as food than to Ireland. Ralph Lane, governor of Virginia, and Sir Francis Drake brought back the first tobacco seen in England. Lane was the first English smoker, but Raleigh made smoking popular. The first tobacco ever grown in England was in the garden of Lord Burghley, in the Strand.

The coming of the king of Spain's great Armada soon recalled Raleigh from Ireland. He had already taken steps for the defense of his country, but he was too late to take part in the battle. It is said that the flagship of the British fleet had been built from designs that Raleigh had made. Gradually Raleigh recovered his lost position at court, and persuaded the queen to fit out a fleet to attack the Spaniards. She would not let *him* go, but his valiant cousin, Sir Richard Grenville, went, and, as we have seen, his little ship, the Revenge, left to itself, fought a marvelous battle against the whole Spanish fleet.

Raleigh now fitted out, largely at his own cost, another and larger fleet for the same purpose, and was allowed by the queen to go out with it to a certain point, to start it well on its way. When he returned to London he was immediately cast into the Tower. The reason was that, while enjoying the favor of the queen, he had dared to fall in love with Elizabeth Throgmorton, one of the queen's maids of honor. The old queen, who had had so many lovers, could not endure such a thing in her favorite, and kept him a close prisoner for six months, treating the unfortunate Elizabeth Throgmorton in the same way.

Raleigh's imprisonment was ended in a strange way. The fleet which he had sent out brought home a richly laden prize. So great was the disorder among the dishonest people of the port that Raleigh had to be released from prison to go down to Dartmouth to keep order while the affairs of the prize-ship were settled. For this he was given his liberty and $180,000, only $10,000 more than he had spent on the expedition. He quietly married the lady of his love, and settled down at Sherborne, in Dorsetshire, where he had an estate.

But his active mind was soon busy with larger schemes than house-building and tree-planting. There were many rumors of a city of fabulous wealth in South America. Prevented from going himself, Raleigh sent out a ship to seek this city of silver and gold, and though from this he got no definite news, he was sufficiently satisfied to set out in search of it himself. He reached the island of Trinidad at the mouth of the river, where he left his ships and in small boats went up the Orinoco River and along some of its tributaries, fighting against tremendous currents and against sickness and privation. He was compelled to turn back, but brought with him quartz containing gold, and also the first piece of mahogany ever seen in England.

When he got back, his enemies declared that the whole story of his exploration was false. To prove his case he wrote a splendid book called The Discovery of Guiana, that being the name by which the country now called Venezuela was then known. He drew maps showing his route, and long after his death all his statements were proved to be true.

Raleigh's next exploit was in an expedition against Cadiz. He was not the leader, but it was upon his advice that the two leaders acted, and the action was a great triumph for his military genius. In another naval action, under Lord Essex, he again distinguished himself. Indeed, had it not been that the queen was at first so fond of him that she would not let him go out on the earlier expeditions, Raleigh's career on the sea might have been the greatest of the age. Raleigh's success in the second action made Essex, his old enemy, jealous. Essex never forgave him, and after many intrigues he declared that Raleigh had tried to have him murdered—a story that proved to be utterly false.

RALEIGH WAS TRIED FOR HIS LIFE ON A CHARGE OF TREASON

Essex was eventually executed for rebellion, but Raleigh's enemies remained many and powerful. They had their way at last when, in 1603, Elizabeth died and James VI of Scotland—a man who in many ways was unworthy of respect—became King James I of England. Raleigh's enemies pretended to James that Raleigh had tried to prevent him from coming to the English throne, and James removed him from all his offices. Soon Raleigh was brought to trial on a charge of treason and conspiracy. Raleigh behaved magnificently, with the eloquence of a scholar and an orator, and with the dignity and firmness of a hero; but he was condemned to death.

The trial created a great impression. Many men had been offended by his haughty ways, but at this trial they remembered what he had done for the honor and glory of the country. One who had hated him said: "When the trial began I would have gone a hundred miles to see Raleigh hanged; before the trial closed I would have gone a thousand miles to save his life."

Raleigh was taken back to the Tower, but the king dared not carry out the sentence of death. He left Raleigh to languish in prison. His wife and family were allowed to live there, too, on paying $1,000 a year. Here Raleigh was visited by the great scientists, poets and scholars of the day, some of whom were, like himself, prisoners in the Tower. His best friend, however, was Prince Henry, the eldest son of King James, a fine young prince. The prince loved Raleigh, and declared: "No man but my father could keep such a bird in such a cage."

RALEIGH WROTE THE HISTORY OF THE WORLD IN A DUNGEON

For the guidance of the prince, Raleigh wrote some notable works on politics and statesmanship, and began for him his famous History of the World. This ran to 1,300 pages before the young prince died, and Raleigh then lost heart and left it unfinished. In it is some of his noblest writing, but it was so frank that the king had it suppressed, because he said it spoke "too saucily of kings."

Raleigh had in the Tower a little laboratory which he made out of a poultry-house, and in this he conducted many scientific experiments. He found out how to get pure salt from sea-water—an art of which we hear little more until three hundred years afterward. For thirteen years he was kept prisoner, and men grieved for him. The thought of this great traveler, warrior and scholar cramped in the little cell in the Tower made their hearts bleed.

In 1616 he was released to go on another treasure-hunting expedition up the Orinoco. He was allowed to leave prison on the condition that he should bring back to England at least half a ton of gold ore similar to the piece he had previously brought. "It is very difficult," answered Raleigh, "for any man to find the same acre of ground again in a country desolate and overgrown which he hath seen but once, and that sixteen years since." Still, he was willing to try.

THE LAST SCENE IN THE LIFE OF A GREAT ENGLISHMAN

His crew was composed for the most part of bad characters, and the expedition was a hopeless failure, dogged by storms and sickness. From the first, misfortune crowded upon the new venture. Raleigh was held back for months in Plymouth harbor by the need of money to provision his ships. This difficulty was overcome and he set sail, only to be forced by storm to take shelter and refit his ships in Cork harbor.

All this took time, and it was not until August that he at length got away on his last voyage. Even then, he was followed by misfortune. One of his captains, who was a traitor, left him at the Canary Islands and went home with a lying tale which was afterward used against him. He encountered terrible

JOHN SMITH GOES DOWN THE STRAND

CAPTAIN JOHN SMITH, WALKING IN LONDON, MEETS AN INDIAN FRIEND FROM VIRGINIA

storms, and sickness broke out in the fleet. Several of his officers, and his friend and servant John Talbot, who had shared with him his imprisonment in the Tower, died.

In spite of all, he was free for the time, and we can picture the white-haired gallant old man as he walked to and fro on the deck of his little ship, thinking great thoughts of the future of his country, or making observations which afterward helped other men to avoid some of the dangers he had run.

ILLNESS AND TRAGEDY MAR THE LAST VOYAGE

He reached the coast of South America in November, and prepared to ascend the Orinoco. But he was so ill that he was unable to undertake the hardships of the voyage up the river, and was compelled to intrust the leadership to the captain of his own ship—Captain Kemyss. The result was failure. Near the mine the party was met by armed Spaniards and Raleigh's son was killed. The Spaniards were beaten back, but the men became mutinous. Kemyss could only lead them back again, and after he had met Raleigh and given his report he killed himself. He could not bear the thought of failure.

Raleigh scarcely dared to think of returning home empty-handed. He thought that he would, as in the old days, capture some Spanish treasure-ships. "They do not call men pirates who capture millions of money," he argued, in the manner of the times. But the men would not follow him, and he had to return home penniless.

There had been some fighting between his men and the Spaniards. As there was peace at this time between England and Spain, this fighting was declared to be a crime worthy of death. Indeed James had promised the king of Spain that if Raleigh landed at any place to which Spain laid claim as her own, he should be executed. James knew that Spain claimed both the shores of the Orinoco as well as every other place in South America, and therefore Raleigh's death had been determined on even before he had turned his ship's head toward home. So Raleigh was again cast into the Tower, and finally led forth to execution at Westminster on October 29, 1618. He was courageous and dignified to the last: a poet still, though Death hovered over him.

A POET STILL, THOUGH DEATH HOVERS OVER HIM

It has been said that on the last night of his life he wrote a beautiful little poem, for which his name will be remembered, but the poem was written long before the last night came, and not in view of the terrible fate which befell him. The poem is called The Conclusion.

> Even such is Time, that takes in trust
> Our youth, our joys, our all we have,
> And pays us but with earth and dust;
> Who in the dark and silent grave,
> When we have wandered all our ways,
> Shuts up the story of our days;
> But from this earth, this grave, this dust,
> My God shall raise me up, I trust.

As he laid his head on the block someone said that he ought to kneel with his head toward the east. "What matter," said Raleigh—"what matter how the head lie so the heart be right?"

So perished one of the greatest men of the great days of Elizabeth. He was not a perfect man: no man is perfect. He had grave faults, but they were the faults of his time. With all his failings, he was a hero and a scholar of the highest type. In happier days he might have become famous throughout the world for science, literature and poetry. With a queen less anxious to keep him at court, he might have become immortal as an explorer and an admiral. As it was, he left a record for gallantry and learning equaled by very few men of any country.

Raleigh's effort to colonize the New World had failed. The development of Virginia was due to Captain John Smith, a son of Lincolnshire, who was born at Willoughby in 1580. At sixteen he was a soldier of fortune in the French army, then in the Low Countries.

CAPTAIN JOHN SMITH AND HIS ASTOUNDING ADVENTURES

With manhood, and after serious study at home, he returned to Europe and experienced adventures which seem fitter in fiction and poetry than in actual history. He was thrown overboard from a pilgrim ship, rescued and sold into slavery by a pirate, and then became a soldier against the Turks, three of whose champions he defeated single-handed in sight of their army. He was a prisoner of war and was again sold into slavery, to escape once more, reach Morocco and an English ship, and so at last to come home, aged twenty-five!

All this is wondrous strange, but the importance of John Smith to the world is that he went out in 1606 to Virginia expecting to find gold, but found only poverty, discontent and incompetence. How he gradually enforced his splendid will, diverted the colonists from begging and stealing to habits of industry and thrift; how he was saved from assassination by Princess Pocahontas, and became the official head and guiding spirit of the colony—all this and more are part of the history of Virginia.

THE SPLENDID WORK WHICH MADE A PROSPEROUS COLONY IN VIRGINIA

Smith explored more than three thousand miles of coast-line, by sea and river; he prepared the first authentic maps of New England; he housed his followers and gave them their first church and their first fortress; and, returning to England, he sent out other colonists, aided them from home, developed fisheries, and generally acted as a fairy godfather to the new England in what was then the wild West. A very great and exemplary man was Captain John Smith, and Virginia does well to honor his memory. He lies in the Church of St. Sepulchre in London.

One other hero of those spacious days can be noted (we have referred to him on page 251), the most mysterious of all. We do not know who Henry Hudson was. That he was born in London is assumed; that he may have been the grandson of a London alderman is possible; that he was a gifted mariner by 1607 is certain, for in that year, accompanied by his little son John, he began the first of his four famous voyages in quest of Eldorado, the golden land of dreams.

We cannot trace his origin, owing to the many different ways in which people of his title spelled their names in those times: Hudson, Herdson, Hoddesdon, Hogeson, and so forth; but he became a historical character with the 1607 voyage, which was none other than a cool proposal to sail "to the Pole."

It was in the Hopewell, a little ship of 60 tons, that Hudson sailed out of the Thames on April 19, 1607. This vessel was not new by any means, for Sir Martin Frobisher had sailed in her on his last voyage some twenty-nine years before. The crew was made up of a boy and eleven men. Hudson set his course toward Greenland, and thence swung northeast. Great ice-fields confronted the tiny craft, but her commander was not daunted. North and north he sailed, in and out among the ice-floes, until he reached latitude 81° 50″ off the coast of Spitzbergen. This was a great achievement, for it was the most northerly point yet reached by an explorer.

But beyond this Hudson could not go because the Arctic seas seemed to be solid with ice against which the small wooden ship would make no headway. The Hopewell turned south again, for Hudson thought that perhaps he might find a passage into Davis' Strait by sailing around the north of Greenland. On this trip many schools of whales were seen. Later, when this news was told in England, whalers set out for the fishing-ground at once, and met with great success. But Hudson could not get round the north of Greenland.

He failed, as he was bound to fail. He failed again when he sought the Northeast Passage, and a third time when, deserted by Dutch companions, he was unable to force a way by the north and west; but he did explore Nova Scotia, the Chesapeake and Delaware bays and the great river which bears his name.

HENRY HUDSON GOES OUT TO DIE IN A LITTLE OPEN BOAT

But his most tragic failure of all was in 1611, when, after wintering amid frightful privation and misery in frozen Hudson Bay, he was turned adrift, with his son and a few men, in a little open boat by a cowardly and mutinous crew, and drifted away to a miserable death.

In a sense, all his voyages were failures, yet they were signally productive, for they each carried knowledge a little farther than before, and they inspired high-hearted emulation in many a follower. His name lives in a river, in a bay, and in a territory of immense size which has become a source of great natural wealth. He did not live in vain, and in his death he kindled a great beacon-light.

Such, then, were the men, such the means by which the British Empire was founded. These heroic souls cleared the seas and carried the first colonists to lands that were wild and terrible, to become the beginnings of homes for millions of people and property without parallel.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5089.

THE MOSSY STONECROP

When this plant is in blossom, its bright golden stars are very attractive. Its leaves have a sharp, biting taste. Sometimes it is called the Biting Stonecrop, because of its effect on the tongue.

THE COMMON BUGLE

The Common Bugle does not look attractive in the woods or by the roadside, where it creeps along sending up high flowering stems, with flowers that are usually deep blue, but sometimes white.

THE WOOD-SORREL

The charming Wood-sorrel, with its white pink-streaked flowers, is often called the Hallelujah, because it blossoms at Easter. Our name sorrel is from the Greek for "sour," and has reference to the acrid juice of the plant.

THE GUELDER ROSE

This belongs to the Honeysuckle Family, to which the elder tree also belongs; in fact, another name for the snow-white Guelder Rose is Water-elder. It is also called the May rose and "Snowball." The flowers are snow-white.

PLANTS OF TWO WORLDS

THERE are a number of flowers which we now value highly, that have been introduced into North America in much the same way as those we have called weeds. On the other hand, there are others that grow naturally in both the Old and the New Worlds.

THE GOLDEN STARS OF THE WALL-PEPPER

In the first group we find the Wall-pepper, or Mossy Stonecrop, which spreads its stem, crowded thick with scale-like succulent leaves, in great mats over stones and dusty waysides. We may find it thus escaped from cultivation from Nova Scotia to Ontario, in southern New York and Virginia. Its widespreading, fine petals look like golden stars on green cushions. All the Stonecrop Family have thick leaves, in which they store up moisture which enables them to grow in the hot, dry, stony places where they are mostly found.

THE DELICATE WOOD-SORREL OF THE NORTH

The delicate Wood-sorrel grows in cold woods throughout the northern hemisphere. Its knotted slender crimson stems run through the leaf-mold, and put out their large trefoils that look like pale clover-leaves. Above them rise the thin stalks that support a single flower of purest white, streaked with the finest line of purple to show where the nectar is to be found at the base of the petals. There are ten stamens, and the single pistil has five stigmas. The seed-vessel has five ridges, which split when the seeds are ripe, and they are shot out to a distance of a yard or more. Before the seeds are ripe, the plant keeps the seed-vessel hidden under its leaves; but afterward the stalk stands upright to raise the seed-vessel well above the leaves, so that when the seeds are fired out, so to speak, they may land far away. The wood-sorrel, like some violets, has two kinds of flowers. One kind is that which we have just described, and the other has little greenish bud-like affairs borne on recurved stalks at the base of the plant. Although these flowers have no means of attracting insects, they are able to develop seeds that will grow, as they pollinate themselves. If insects visit the gay flowers above, well and good, but if not, the cleistogamous (as they are called) inconspicuous flowers will ripen fruit. The three heart-shaped leaflets drop in the sunshine, and at night they

"sleep"—that is, they droop and close against one another.

THE HERB ROBERT IS A SMALL GERANIUM

In the large, widespread Geranium Family we find the soft, hairy Herb Robert, in our country often perched on damp rocks and banks. It has much-divided leaves, more or less reddened (and sometimes entirely red), which have an unpleasant smell when passed through the hands. We do not know who was the Robert for whom this "holy herb" was named—perhaps a Benedictine monk, perhaps a duke of Normandy. It has pale magenta flowers with fine lines, or "honey-guides," of red on its petals. Its stems are red, also, and its joints where the leaves are attached are swollen. It flowers all summer. The seed-vessels have a long column or beak with a circle of five one-seeded pockets at its base. By a process of unequal drying when the seeds are ripe, the coverings of these cavities, which are prolonged into long tails reaching to the apex of the beak, are suddenly jerked up and curled in rolls at the tip of the fruit, and the seeds therein are sent flying away. It is done so quickly when one touches a thoroughly ripe capsule that it makes a person jump. And this is the habit of all the geraniums.

Plants which are found along railroad tracks and about seaports, the seeds of which have slipped out of grain-bearing freight cars, or during the process of unloading grain from ships, or have, perhaps, been brought in the ballast of the ships, are often called ballast plants. They are generally inoffensive, and are regarded as fugitives, as it were, from foreign countries. Occasionally, however, they become weeds.

THE VIPER'S BUGLOSS, SOMETIMES CALLED THE BLUE-WEED

There is a stretch of railroad track along the Hudson River that is gay with the Viper's Bugloss, a bristly ballast plant with oblong and lance-shaped leaves and a straight stem three feet high. From the upper part of this stem short curved side-branches are given off, which bear crowded flower-sprays. These flowers, before they fully open, are often purplish red in color, but when they expand they turn to a most brilliant red. In Canada and elsewhere it is called Blue-weed, and is a troublesome plant in rocky pastures. The quartet of little nutlets that each plant contains are scattered broadcast as the dead plants are blown over the country. The scarlet stamens and the style, jutting well out from the flower, form a platform for insects, by means of which they both deposit and take away pollen carried on the under-surface of their bodies. The blue-weed, in spite of its coarseness, is a very close relative of the delicate forget-me-not and heliotrope, all alike belonging to the Borage Family.

THE YELLOW-FLOWERED BIRD'S-FOOT TREFOIL

The Bird's-foot Trefoil with pale yellow flowers, that is common in every field of England, here appears only as a ballast plant. It belongs to the Pea Family and has some odd habits. It is one of the plants that sleep at night, each one of the triple leaflets hanging straight down from the tip of the leaf-stalk after sundown. The wings are folded over the keel so as to form a kind of cushion for a honey-seeking insect, and as it settles down astride their saddle a little worm-like thread of paste appears at the tip of the keel and sticks to the bee's under-surface. This is pollen. The club-shaped anthers form a sort of partition between the main cavity of the keel and a small one at its very tip. This latter space is filled with pollen by the anthers, the longest style projecting into the mass. Pressure on top of the keel forces the stamens and the style upward and forward, so that they push the pollen out through a small hole at the tip exactly as the plunger of a pump forces water out of its spout. If the keel be pressed, the style itself is pushed out, and is likely to take up some pollen from the visitor's coat.

THE FLOWER OF THE STONE-CLOVER LOOKS LIKE A SOFT BRUSH

In the pea-flowered family we also find the Old-field, or Stone-clover, whose fluffy heads of flowers are supposed to resemble the foot of a tiny hare, whence its common American name of rabbit-foot clover. It does not look much like a clover at first sight, for its trefoil leaves have very slender leaflets, and its calyx teeth are so much longer than the petals that they give the flower-head the appearance of a soft brush, amid which the tiny pink petals are almost hidden. It has become very thoroughly naturalized, but is

THE HERB ROBERT

The dainty little Herb Robert, with its delicate pink flowers and its crimson leaves, is a wild geranium. In some parts children call it by the name Kiss-me-quick. We can often find it in shady rocky places. It has a strong sharp scent.

THE VIPER'S BUGLOSS

This handsome plant, with its red and blue flowers, was supposed to give protection against a viper's bite. The name means "ox's tongue," and refers to the shape of the leaves. The flowers are rich in honey and much visited by bees and other insects.

THE BIRD'S-FOOT TREFOIL

This is one of the Pea Family, and the bright little flowers are succeeded by pods which spread out and suggest a bird's foot. The plant is used for fodder. It is much enjoyed by cattle. This plant owes its fertilization to the bumblebee.

THE RABBIT-FOOT CLOVER

This flower, which is one of the clovers, gets its popular name from a supposed resemblance of its soft, hairy blossoms to a rabbit's foot. It grows in dry fields, generally a foot high and its numerous flowers are pinky white in color and delicate.

useless for fodder, and therefore is left in sole possession of disdained dry stony fields.

THE TUFTED VETCH, ALSO CALLED THE COW-VETCH

The Tufted Vetch, another pea, is just as much a native of America as it is of Europe or Asia. Its weak stems thrust out dense one-sided sprays of bright blue drooping flowers that, like those of the rabbit-foot clover, are fertilized by means of the pressure exerted on the keel. It is a persistent perennial, difficult to get out of old meadows; but as its foliage with many leaflets affords a good fodder (whence, perhaps, its name of cow-vetch), this does not so much matter.

FOOL'S PARSLEY, AN UNDESIRABLE IMMIGRANT FROM EUROPE

In the Carrot Family, which contains many poisonous plants, very easily mistaken for harmless ones, we have the Fool's Parsley, which, although originally brought from Europe, has become sufficiently at home in waste places to be guarded against. It is a slender-stemmed herb, with delicate shiny much-divided leaves, known as fool's parsley because no wise person would be likely to mistake its uncurled leaves for those of the true parsley. It grows to about two feet in height and bears umbels of tiny white flowers. From the base of each umbel hang down from three to five slender green points, or bracteoles. This should be remembered as an especial point by which to recognize this poisonous plant. Its seeds, that are not to be tasted, are in pairs forming nearly spherical, strongly ribbed shining fruits.

THE POISONOUS WOODY NIGHTSHADE, OR BITTER-SWEET

Another one of the poisonous plants that we find depicted here is the Woody Nightshade, or Bitter-sweet, a member of the Potato Family, which has made itself thoroughly at home in our thickets, and climbs in a half-hearted manner over shrubs, or merely straggles along the ground. It has rather unusual leaves, ovate or hastate in general outline, but three-lobed or divided, the apical lobe being the largest. It has a typical potato blossom, in cymes, star-like, with yellow stamens projecting like a beak, but usually the flower is dull purple. The berries succeeding the summer blossoms are among our most striking fruits, as they are fleshy and egg-shaped, and when fully ripe are a brilliant scarlet; but in one cluster we may find green or yellow as well as red berries. It is a dangerous plant to eat.

THE LEAVES OF THE GREEN HELLEBORE ARE FRESH ALL WINTER

In Great Britain they have also the early-flowering Stinking Hellebore and the Green Hellebore, both of them belonging to the Buttercup Family. As in some other members of this family, the showiness of the flowers is due to the large sepals. The green hellebore's leaves are large and handsome, and are divided into a number of leathery slender leaflets which spread out from the top of the leaf-stalk like the outstretched fingers of our hands. They are dark green, and retain their color and freshness throughout the winter; but in the new year the stem makes a sudden growth and puts forth oval leafy bracts and large drooping flowers. We should scarcely find the true petals unless we knew where to look for them, for they have been turned into little green two-lipped tubes that are filled with nectar, and these are hidden at the bottom of the flower beneath the many stamens that stand crowded around the two or three pistils. The flower opens slightly, when the curved stigmas overtop the unripe stamens and receive pollen brought by any early bees or flies, which have to crawl over them and into the flower to reach the nectar. Later the stamens spread out more, the outer sepals get a line of purple along their edges, and the anthers shed their pollen. When this is all gone the stamens drop off, and the pistils grow into seed-pouches that open at the top, something like those of the columbine.

THE SWEET MARJORAM HAS TWO KINDS OF FLOWERS

Another garden plant which we know well is the Sweet Marjoram, a mint that in its native land covers wide stretches of downland. Its perennial underground rootstock sends out runners all round, so that we always find it in masses. The branching square stems grow to about three feet in height, and are clothed with oval leaves that end in clusters of purple flowers. These are of two sizes; the larger dark purple ones having both stamens and pistil, while the smaller and paler ones have only a pistil. The yellow-dotted calyx is almost hidden by

THE TUFTED VETCH

This is one of the most ornamental of wild flowers. Its purple flowers add a delightful touch of color wherever it grows. When the flower withers, the seed-vessel grows into a pea-pod with a curly tail.

THE FOOL'S PARSLEY

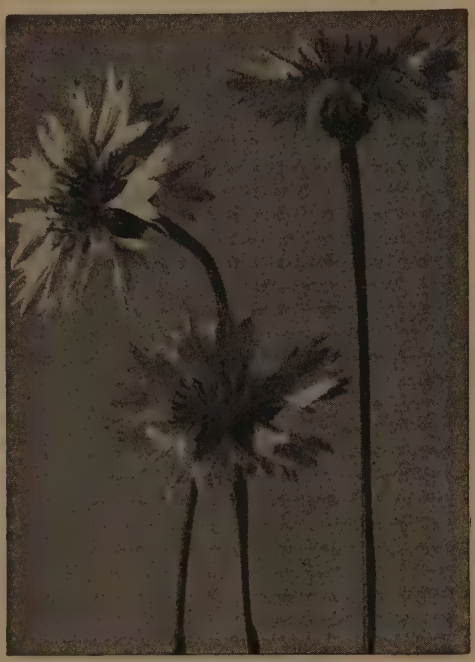
This plant is poisonous. Because people have often gathered it under the impression that it was parsley, and have died through eating it, it has gained the name of Fool's Parsley. Its odor is horrid.

THE WOODY NIGHTSHADE

The Woody Nightshade, or Bittersweet, a familiar object in our woods, belongs to the Potato Family. The flowers are purple and yellow, and the leaves vary in shape. The berries are a brilliant scarlet.

THE SWEET MARJORAM

This is one of our kitchen herbs, and an oil from it is used to relieve toothache. The plant is fragrant, and the light purple flowers growing in thick clusters at the ends of the stalks are very charming.



THE CORNFLOWER

This is the German national flower. A lotion used to be made from the flowers to strengthen the eyes, and the French call them break-spectacles, meaning that after the lotion glasses are no longer needed.

THE STINGING-NETTLE

We all avoid the Stinging-nettle, although if the leaf be grasped quickly and firmly it gives no pain. The flowers are smaller than those of the dead-nettles. Most of us have played tricks with it.

THE WHITE DEAD-NETTLE

This flower is very much like the red dead-nettle, but is larger in all its parts. It is stingless, and blossoms from spring to autumn. The Dead-nettle is eaten by animals only when it grows alone.

THE RED DEAD-NETTLE

This flower is no relative to the Stinging-nettle, although the leaves of both are very much alike. The name dead-nettle was given because its foliage does not sting. It is also called archangel.

THE GROUND-IVY

The Ground-ivy, which is one of our earliest spring flowers, is no relative of the real ivy. It used to be called ale-hoof, and was much used in brewing. It is also called Gill-over-the-ground.

THE GERMANDER SPEEDWELL

This has various names, Bird's-eye and Cat's-eye, and it is often called Forget-me-not, although the real forget-me-not is another flower—the myosotis. The Germander Speedwell was considered unlucky.

THE COMMON MALLOW

This plant is called Rags-and-tatters, but that is not a fair name, for the pale purple flowers are very showy, and, except where they have been riddled by snails and caterpillars, the leaves are quite attractive and of a very beautiful color.

THE CHRISTMAS ROSE

This is one of the garden flowers rarely seen on this side of the ocean, and is not a rose. Its root is called black hellebore, and although acridly poisonous, has been used as a medicine. It blooms very early in the spring, and even in winter.

the larger purple bracts. Beginning to flower in July, they keep up a continuous display well into the autumn.

THE BRIGHT BLUE CORNFLOWER, OR BACHELOR'S BUTTON

Another common garden flower is that composite of many names, such as Bachelor's Button, Bluebottle and Cornflower, but we here must always remember that corn to the Englishman does not mean maize, or Indian corn, but grain, especially wheat. The round base of the flower-head, covered or protected by broad scales, somewhat suggests a thistle, but it has very conspicuous rays. The inner flowers are purple and tubular, but the outer florets are like trumpets with jagged brims. The florets in the cornflower have divided their duties. The brilliant azure of the large flaring flowers on the outer circle of the flowering heads serves only to attract insects, for they are without pistil or anthers. The fruitful ones are the insignificant purplish ones within the centre. These have both pistil and stamens, the latter united into a ring about the flower, poised on slender filaments. They exude pollen until the tube of the flower is quite filled, and this helps attract insects.

THE STINGING-NETTLE HAS COME FROM THE OLD WORLD

Many a child whose bare limbs are scarlet and prickling rues the day when the Stinging-nettle first extended its travels from the Old World to the New. It does not in the least interest that child, at that moment, to know that hemp-fibres, woven into the ropes he plays with, have been extracted from a plant of the same family. The stings are inflicted by the peculiar weapons borne by the nettle for warding off plant-eating animals. Each hair is expanded at the base, and at the top is swollen into a little round cap bent to one side. At this bent portion the walls are very thin, and the head is broken off at the slightest touch, leaving a sharp point that penetrates the skin, and by means of which the irritating contents of the hair are forced into the wound. Oddly enough, an acid possessed by ants, and which helps to make a bite of that insect burn, is present in these nettle-hairs. These hairs irritate the membranes of the mouth and nose of browsing beasts, and they carefully avoid the plant.

Among the nettles may grow the dead-nettles that are members of the Mint Family, and therefore are not nettles at all, but have been so called because the leaves of the white ones are very much like those of the stinging-nettle. As these do not sting, they are called dead-nettles, or in some places dumb-nettles.

THE WHITE DEAD-NETTLE HAS NO STING

Most frequently we shall find the White Dead-nettle growing against, or among, a clump of stinging-nettles, and then we shall notice how much the leaves of the two plants are alike. The dumb animals, dreading lest they be stung by the real nettles, and evidently observant of the general appearance of a nettle-plant, carefully avoid all other plants of like appearance. Consequently the dead-nettle is left uneaten and is able to ripen its seeds in safety, especially when in company with the stinging-nettles. This is a form of self-defense obtained by a likeness to a dangerous plant—protective mimicry it is called.

GROUND-IVY, OR GILL-OVER-THE-GROUND

The Ground-ivy, another scentless mint, has earned for itself the name of Gill-over-the-ground. It is a kind of name that reminds one of Creeping Jenny or Wandering Jew. These names have been earned by the plant's habit of traveling over the ground by means of long runners. We often see the ground-ivy along damp banks or in shady thickets as it creeps under the hedgerows of England whence it came, forming carpets of furry, nearly round and evenly toothed foliage, and holding up little clusters of blue-purple flowers very early in spring. It also has smaller flowers containing only a pistil.

THE PRETTY BLUE FLOWER-SPRAYS OF THE GERMANDER SPEEDWELL

Upon sunny banks in early summer we are sure to find the Germander Speedwell, or Bird's-eye. The bright blue blossoms in the axils of the upper sessile leaves, have a short tube to the corolla. Of the four lobes that represent the petals only two are of the same size. All are marked with fine lines of darker blue, leading to the mouth of the tube, and to guide the flies that carry the pollen each is margined with white. The stamens bend downward and inward, thus insuring pollination.

THE NEXT STORY OF PLANT LIFE IS ON PAGE 5157.

FLOWERS OF TWO WORLDS

1. Tree Mallow. 2. Sea Purslane (E.). 3. Sea Radish (E.). 4. Storksbill. 5. Seaside Smooth Gromwell (E.). 6. Common Tamarisk. 7. Golden Samphire (E.). 8. Marsh Mallow. 9. Purple Sea Rocket. 10. Sea Heath. 11. Cranesbill. 12. Common Fennel. 13. Halberd-leaved Orache. 14. Sand Rocket (E.). 15. English Stonecrop (E.). 16. Beach Pea.

Flowers marked (E.) are European and are not generally found in America.

1. Yellow Horn Poppy. 2. Sea Lavender. 3. Red Bartsia. 4. Burnet Rose. 5. Sea Wormwood (E.). 6. Sea Kale (E.). 7. Rest-harrow (E.). 8. Sea Campion (E.). 9. Dwarf Tufted Centaury (E.). 10. Common Alexanders (E.). 11. Convolvulus. 12. Great Sea Stock (E.). 13. Seaside Cudweed.

1. Common Broom (E.). 2. Greater Butterfly Orchis (E.). 3. Hairy Violet. 4. Harebell. 5. Common Tormentil (E.). 6. Good King Henry. 7. Furze (E.). 8. Yellow Fleabane (E.). 9. Rockrose (E.). 10. Devil's-bit Scabious (E.).

1. Common Bird's-foot (E.). 2. Wild Mignonette (E.). 3. White Horehound. 4. Small Bugloss. 5. Columbine (E.). 6. Needle-whin (E.). 7. Wood Cudweed. 8. Wall Hawkweed. 9. Common Burdock. 10. Common Calamint (E.).

1. Hawkweed Picris. 2. Quinsywort (E.). 3. Hawk's Beard. 4. Salad Burnet (E.). 5. Common Saw-wort (E.). 6. Aspersit. 7. Dwarf Plume Thistle (E.). 8. Spider Orchis (E.). 9. Common Autumn Gentian (E.).

1. Marjoram (E.). 2. Grass Vetchling (E.). 3. Goat's Beard. 4. Field Fleawort (E.). 5. Plume Thistle.
6. Autumn Lady's Tresses (E.). 7. Chalk Milkwort (E.). 8. Common Mallow. 9. Great Knapweed.

1. Downy Rose (E.). 2. Goldilocks. 3. Lily-of-the-Valley (E.). 4. Hyacinth (E.). 5. Bird's-nest (E.). 6. Cranesbill. 7. Linnæa Borealis, or Twin Flower. 8. Marsh Hawk's Beard. 9. Narrow-leaved Everlasting Pea. 10. Cornel (E.). 11. Rosebay, or Willow Herb.

1. Tutsan (E.). 2. Bitter Vetch. 3. Yellow Dead Nettle (E.). 4. Ramson (E.). 5. Spreading Bell-flower (E.). 6. Orpine. 7. Sweet Woodruff (E.). 8. Ivy-leaved Lettuce (E.). 9. Common Yellow Cow-wheat. 10. Yellow Pimpernel (E.). 11. Myrtle. 12. Wood Strawberry.

1. Groundsel. 2. Borage. 3. Ling. 4. Woad (E.). 5. Slender-flowered Thistle. 6. Yellow Figwort (E.). 7. Teasel. 8. Basil Thyme (E.). 9. Great Broom Rape (E.). 10. Ciliated Heath (E.).

1. Common Star Thistle. 2. Smooth Hawk's Beard (E.). 3. Rampion (E.). 4. Common Wormwood.
5. Common Hound's Tongue. 6. Lesser Stitchwort (E.). 7. Milkwort (E.). 8. Dyer's Weed (E.).
9. Black Horehound. 10. Rough Sow Thistle.

1. Ivy-leaved Sowbread (E.). 2. Common St. John's-wort. 3. Bush Vetch. 4. Oxlip (E.). 5. Barberry. 6. White Star of Bethlehem. 7. Fetid Iris (E.). 8. Snowdrop (E.). 9. Enchanter's Nightshade. 10. Herb Bennet. 11. Wood Violet. 12. Giant Bellflower.

1. Tuberous Bitter Vetch. 2. Trailing Rose. 3. Forget-me-not. 4. Yellow Star of Bethlehem.
5. Daffodil (E.). 6. Crested Cow-wheat (E.). 7. Bird-cherry (E.). 8. Corn Gromwell. 9. Speedwell.
10. Pine Bird's-nest (E.). 11. Wood Germander.

1. Common Fumitory. 2. English Catchfly (E.). 3. Lady's Fingers. 4. Viper's Bugloss. 5. Rough, or Hairy, Hawkbit. 6. Great Burnet. 7. Yellow Rattle. 8. White Clover (E.). 9. Common Eyebright.

1. Creeping Plume Thistle (E.). 2. English Daisy. 3. Field Gentian (E.). 4. Bird's-foot Trefoil. 5. Mountain Cranesbill (E.). 6. Penny Cress. 7. Wild Basil. 8. Meadow Saxifrage (E.). 9. Field Speedwell. 10. Black Knapweed. 11. Spring Cinquefoil.

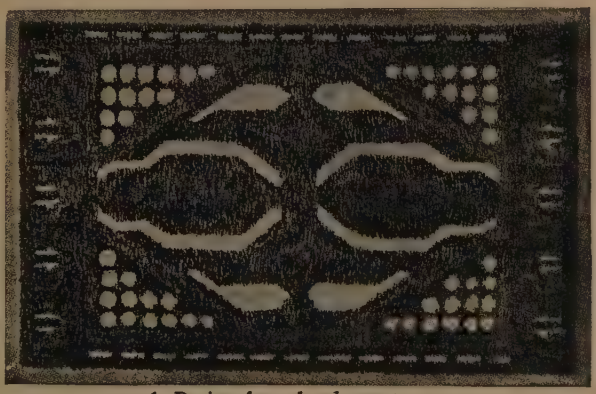
1. Ox-tongue (E.). 2. Sweet-scented Orchis (E.). 3. Sweetbriar. 4. Great Snapdragon (E.). 5. Milk Thistle. 6. Round-headed Rampion (E.). 7. Tufted Centaury (E.). 8. Biennial Hawk's Beard.

1. Clustered Bellflower. 2. Black Nightshade. 3. Ragwort. 4. Nipple-wort. 5. Musk Thistle.
6. Bee-orchis (E.). 7. Pasque Flower (E.). 8. Pale Blue Toadflax. 9. Cat's Ear.

HOW TO MAKE HAND-WOVEN RUGS

WOULD you like to make a rug that will be appropriate for a porch or for your bedroom? This hand-woven rug is well adapted to the present demand for a simple and inexpensive rug that is also artistic and durable. For such a rug new materials are preferable to the half-worn clothing and pieces that were used to make up the "hit-or-miss" rugs of earlier times.

Then, too, with new materials the design and color can be studied more carefully in relation to the room in which the rug is to be placed. Artistic effect, both in color and in weave, may be given special attention in selecting and using the materials. First consider the desired colors and their appropriate location. The cost of these rugs is comparatively little, so you cannot afford to overlook the artistic effect. Although you might have these rugs made to order from rags which you would supply, usually it is better to make or to buy a loom and experiment for yourself. The rug may be made of any shape, size or design, and you may adapt it to any color-scheme. Experimenting with various materials may result in a rug that will be original as well as beautiful. In picture 1 is shown a rug design that answers this description.



1. Design for a hand-woven rug.

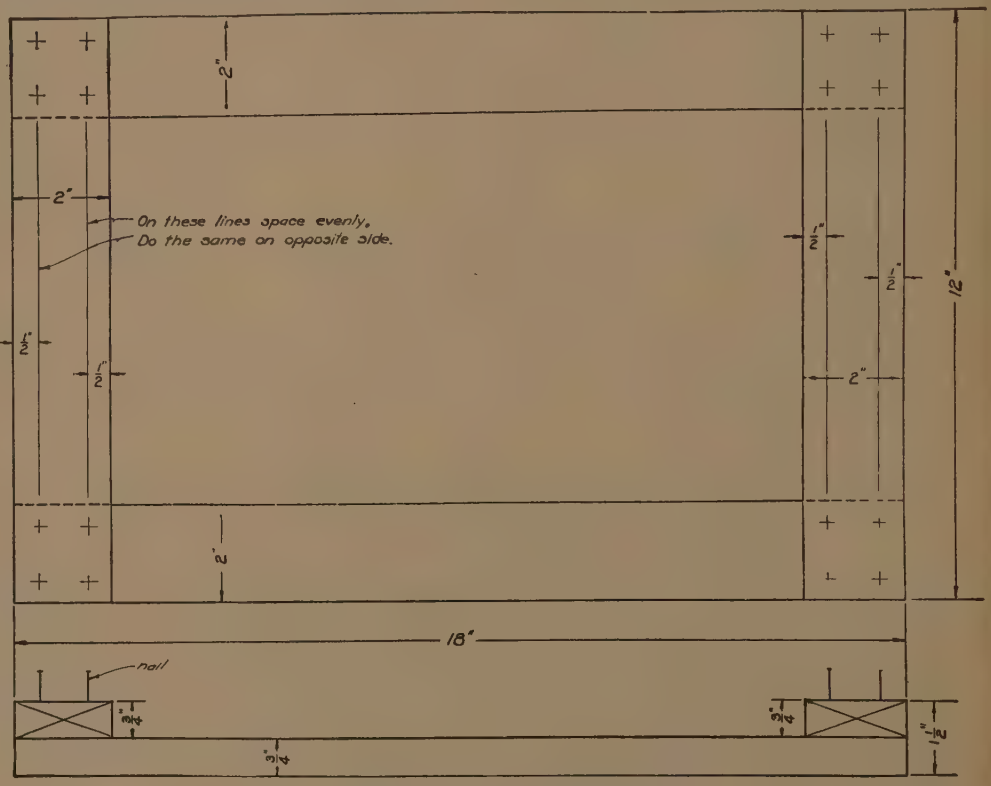
If you decide to experiment, you should find it interesting as well as profitable. It is not difficult to obtain simple and practical results. The cost of the loom and materials will be comparatively small. If you prefer, an old loom may be bought for a few dollars. Likewise, a new one may be made for you or a new one may be bought already made. However, it is quite easy to learn how to make a suitable loom, and the expense of the necessary materials for it is little in comparison to the cost of a loom which you might buy.

For example, a simple loom may be made of four sticks by laying the two long ones parallel and nailing the two short ones on these at the ends. A more suitable loom is shown in picture 2. This may be enlarged. Along each short stick you should drive a straight row of nails or tacks about ¼ inch apart. At first you might experiment by stringing the loom with cotton twine, passing it around the tacks from end to end. Then use, for woof, cotton roving or rags torn about 1 inch wide and sewed together. For decoration, a different color may be woven in, as planned. If you have trouble in keeping the edges straight, stiff wires can be fastened in screw-eyes along the edges and then you may weave over these.

You should slip the wires out when the weaving is finished. When the rug is woven, a fringe can be made. To do this, cut the material to be used into lengths a little more than twice as long as the fringe is to be. Next, fold these threads in the middle and use a crochet hook to pull this loop through the end of the rug. When it has been drawn through about an inch, push the ends through the protruding loop and draw them tight. You should do this until you have fringe all the way across both ends. However, several of these smaller rugs may be sewed together to make a large one if this is desired. The warping-up for a large rug is difficult, but the weaving itself is simple. Usually the beginner does not use dyes, but buys inexpensive cotton materials. The selections of colors should be made carefully. Surprisingly good results can be secured in this simple way. However, since one of the practical beauties of these rugs should lie in the fact that they can be washed repeatedly, it is well to consider the color question from the practical as well as from the artistic side. You should buy materials that at least have a reputation for fast color. When the dye-pots are used, only fast vegetable dyes should be selected, and these should be carefully fixed and tested before the weaving begins.

Old materials, such as curtains and ingrain carpets, may be used if they are in good condition and the colors are fast, but as a general thing new materials are better. Ginghams, percales, prints, cotton-flannels, chintzes, canvas, chambrays, ticking, denim and the like can be worked up beautifully if the colors are carefully chosen. Ticking and denim are more durable than the thinner materials. Denim is especially artistic in color, and is one of the satisfying materials that can be raveled on the edges so that the surface of the rug will be rough and artistic. Unbleached cotton cloth, cheesecloth, canvas—anything in a light, neutral tint that will take color well—is used for dyeing.

The color effect depends more upon the warp than is usually realized. The warp actually tones the colors. An ecru warp gives a soft, mellow tone to colors that might otherwise be crude; an indigo warp with a green filling and touches of the indigo in the figure and border is very effective; a brown warp with an old-blue filling and dashes of brown and dull yellow in the border is very rich and beautiful; an ecru warp and an old blue filling, or a light brown warp and dark brown and yellow filling—all are harmonious and artistic. When materials are dyed, no effort is made to have the cloth take the color evenly. For this reason the effect of light and shade is usually good. In weaving, although there is preferably a definite design, bits of harmonious color are frequently introduced unevenly, especially in the borders. Indeed, the most artistic rugs are not those with an absolutely smooth surface and borders and



2. Working drawing of a small hand-loom.

designs mathematically arranged with hard outlines. A very good color-rule is to introduce the warp color in the border or figure. Sharply contrasting colors should not be used.

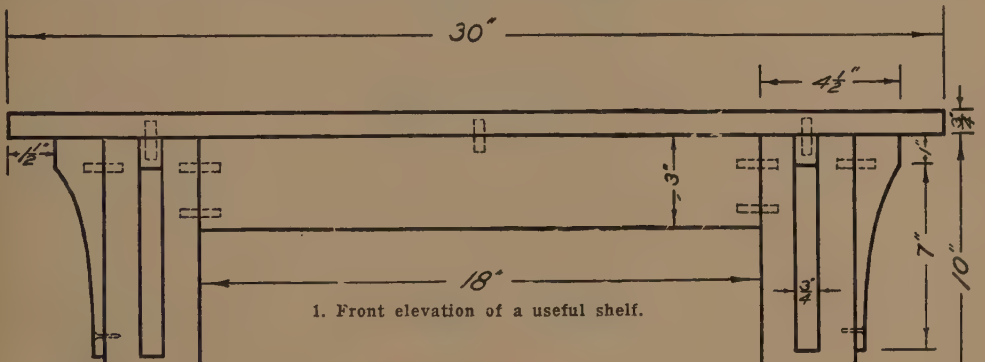
In preparing materials for weaving, whether you are to do the actual weaving yourself or give the rags when cut and wound to an expert weaver, great care must be taken. The strips may be cut straight or on the bias. Those cut on the bias are more flexible and will make more flexible rugs. The strips should be about ¾ inch wide, or a little less if the material is heavy. If the strips are not on the bias, it is easier to keep them exactly the same width by tearing instead of cutting. In all cases they must be sewed together very smoothly and firmly, so that there will be no bunches in the weaving. It is usually better to keep the colors on separate balls, without attempting to mix them. Striped and figured materials give very attractive results with borders of a plain material, but the plain material should be kept in a separate ball for the weaver to use as he pleases. The amount of material required for cotton or woolen rugs in a smooth weave is from 1½ to 2 pounds of rags for 1 square yard of weaving; for silk rugs or portières, 1 pound for a square yard; for a roughly woven cotton or woolen rug from 2 to 4 pounds.

HOW TO MAKE A USEFUL SHELF

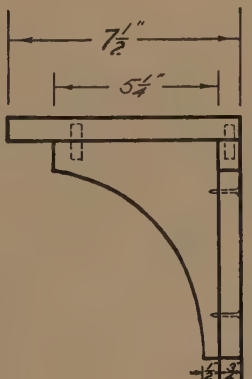
NEARLY every home has need for at least one additional shelf. The use which would be made of such a shelf will vary from one to hold spices or cookbooks to one to accommodate a clock. Of course the design of such a shelf should be determined both by its use and by the surroundings where it is to be located. Likewise, the wood selected might be either a soft or a hard wood, depending upon the kind of woodwork in the room where it is to be used, and with which it should be harmonized. Stock ¾ inch in thickness is suitable.

The particular shelf design in the accompanying picture is suggested because it is simple of line and may be easily adapted to most purposes. For ordinary use it is found that a shelf 7½ inches wide and 30 inches long is large enough, although these dimensions should be modified, if necessary, so that the shelf space will be adequate for your purpose. Then, too, the available wall space will necessarily determine the length of each shelf in many cases. For this reason it is first advisable for you to decide just where the shelf is to be located.

After deciding upon the dimensions of the shelf you are then ready to determine how the shelf will be held in place. If there is not a molding strip to which the back of the shelf may be fastened, the plan shown in the picture will prove highly satisfactory, because it is easily followed and will result in a rigid construction. It will be observed that dowel joints are suggested to simplify the joining of the braces, framework and top. Although screws may be used throughout, the use of dowels will give a more attractive shelf as well as a stronger one. In case the dimensions of this shelf are modified the dimensions of the supports should also be changed, in order that these may be in proportion to the top. It is intended that this shelf should be fastened to the wall with screws of suitable length to hold it firmly in place.



1. Front elevation of a useful shelf.



2. Side elevation of shelf design.

The finish for this shelf should be in keeping with that of the room. If natural wood is used in the room, it will only be necessary to sandpaper and varnish it; however, if the woodwork is stained or enameled, the shelf should be made to match. Usually it is not difficult to match colors in stain or enamel, for paint shops have paint color-cards.

MANY WAYS OF STOPPING BLEEDING

A FIFTH LESSON IN FIRST AID TO THE INJURED

CONTINUED FROM 4848

QUITE a common form of accident is that in which some blood-vessel is injured, and the blood begins to leave the body. Sometimes the wound may be caused by the end of a fractured bone piercing the blood-vessel; at other times it may be caused by a knife or a piece of broken glass, or some similar object with a sharp point or edge; but, however the wound may have been caused, it is essential that the bleeding be stopped at once, and so first aid is particularly valuable in injuries of this kind.

The proper name for bleeding is hemorrhage, which is made up of two Greek words meaning "blood" and "to break," so that hemorrhage really means "bleeding through the breaking of a blood-vessel." Hemorrhage may be either arterial, venous or capillary.

Before learning how to stop bleeding we must again examine the picture, which we studied in an earlier lesson, showing the main arteries of the body and the spots where, in case of injury, we apply pressure in order to stop the bleeding.

A simple diagram showing how the blood moves in the arteries and veins.

When we injure ourselves and blood comes from the wound, this blood is sometimes bright scarlet in color, and at other times it will be a dark red. Then the blood may spurt out of the wound, or it may ooze out, or it may slowly trickle. It is the color of the blood, together with the manner in which it comes out, that enables us to know where the blood comes from—whether from an artery, or a vein, or a capillary. This knowledge is very important.

First of all, we must know how to recognize arterial bleeding. It is the most serious kind of bleeding, and when one of the larger and more important arteries is injured it is very dangerous. Many a man who has received an injury to a large artery has had his life saved by first aid skillfully given.

How to fold a pad.

In arterial bleeding the blood is bright scarlet, and spurts out in jets, this spurting being caused by the pumping action of the heart. At each pump of the heart a jet of blood is spurted out.

In bleeding from a vein, which is called venous hemorrhage, the blood is dark red and flows in a slow, steady, trickling stream.

Capillary hemorrhage is the least serious of all, and usually occurs when we have a slight cut or graze. The blood is red, and oozes from the wound, and it soon stops flowing because the blood clots and stops up the cut. If it does not stop of its own accord, we can make a small fold of lint or clean linen rag, and tie this upon the wound.

To stop arterial and venous bleeding different methods are used, but there are one or two general principles that must always be considered.

First of all, we should remember that all bleeding can be stopped for the time being by pressure with the fingers, and therefore the first thing to do in a case of injury is to use pressure, even before we consider whether the bleeding is arterial or venous or capillary. Then, in the second place, let us remember that blood, like water, never runs uphill unless it is forced to do so. Therefore, the injured limb should be slightly raised or the patient placed in such a position that the blood is not allowed to run down and out of the wound. All tight-fitting garments, such as collars and garters, which would hinder the free return of blood to the heart, should be removed at once. Before learning how to stop bleeding from arteries and wounds we must remind ourselves of the direction in which the blood flows through these vessels. As we know, in the arteries the blood is always passing away from the heart, while in the veins it is passing toward the heart. If we think for a moment, we shall see that the point at which we apply pressure in arterial bleeding is not the same as in venous hemorrhage, simply because the blood is passing in different directions in the different kinds of blood-vessels. The simple diagram on this page will show how the blood circulates in our body. The pure blood, bright red in color, is pumped from the lower part of the left side of the heart, *H*, through the arteries, *A*, into the capillaries, *C*. From these it passes into the veins, *V*, having now become impure and dark in color. The veins carry the blood back to the upper right-hand side of the heart, from which it passes to the lower part of the right side, and is then pumped through an artery, *P*, called the pulmonary artery (which means simply the lung artery), and is carried to the lungs, *L*. There the blood is purified and carried back to the upper left-hand side of the heart by the pulmonary, or lung, veins, *X*. The blood is bright red in all arteries, except in the pulmonary artery, where it is dark and impure; and it is dark red in all the veins, with the exception of the pulmonary veins, where it is bright red and pure, because it has come straight from the lungs.

To stop bleeding from an artery, first of all we press with the fingers, and as most of the larger arteries run close to the bones, we can press the artery against the bone. In

arterial bleeding we must always press on the side of the wound nearest to the heart, and thus meet the blood coming from the heart, as it were, and stop it spurting out of the wound.

There is a spot in most of the larger arteries where pressure can be applied with the greatest advantage, and this is called the pressure point. We should look again at the picture of the arteries which we saw when we were learning the positions of these important blood-vessels, and should notice exactly where the pressure points are for the various arteries. The pressure, to be effectual, need not be severe, but must be accurately applied.

The pressure may sometimes be applied to the wound itself, and in this case we press on the bleeding point with finger and thumb, and so close the hole in the artery from which the blood is coming.

Of course, the pressure of the fingers is merely to stop the bleeding for the time being. So, as soon as we can, it will be necessary for us to prepare and apply a pad and bandage to the wound, and press the artery at the pressure point with what is called a *tourniquet*. Tourniquet is a French word meaning a "little turn," and the instrument consists of a special strap-bandage with a screw attached. In rendering first aid it is almost certain that we shall not be able to get a proper medical tourniquet; therefore we shall have to make one.

Twisting a bandage.

First of all, we apply a pad and bandage to the wound. We take a piece of sterilized gauze, which can be bought at any drug store, or a clean handkerchief, and fold it into a pad. The way to do this is to spread out the handkerchief, fold the corners to the centre, as in the picture on page 5000, fold over again at the dotted lines, and keep on doing this until a hard pad of the required size is formed. We place the smooth surface of the pad to the wound, and secure it in position with a bandage or another handkerchief tied round the arm as in the case of fractures. Sometimes it may be useful to put a small smooth stone inside the pad, as this will considerably stiffen it.

For a tourniquet we make a pad in the manner just described, putting a smooth stone inside. This we place accurately on the pressure point of the artery, and keep it in position by passing a medium or narrow bandage round it twice and tying it on the side opposite to the pressure point. Then between the bands of the bandage we pass a strong stick, or any similar object, and twist it round and round as shown in the picture on this page, until the pressure of the pad stops the flow of blood. The stick of the makeshift tourniquet can be kept from springing back by tying another bandage over it.

If we have no proper bandage at hand and are compelled to use an ordinary pocket-handkerchief, or something that will not go round the injured limb twice, we can, after placing the pad on the pressure point, pass the handkerchief round, tie the ends in a half-knot, then place the stick upon this, and tie the ends again in a reef-knot. We can then twist the stick round until we are successful in stopping the flow of blood. If there should be no stone, cork or other small, hard object available for placing in the pad, and even no spare handkerchief from which to make the pad, we can tie a hard knot in the handkerchief which we tie round the limb, being careful to see that the knot is placed exactly on the pressure point.

The patient should be laid down, if possible, and the injured part should be raised so that as little blood as possible may flow into it. The clothing should be removed from the wound in the correct way, which we already understand. If there is anything in the wound, such as pieces of broken glass, or earth, these must be removed, but we must not interfere with the wound in order to find things which we cannot see. If a clot of blood forms over a wound, this should never be disturbed, as it assists greatly in stopping the bleeding. No attempt should be made to wash a wound except with cold water which has been previously boiled.

The treatment applied for stopping bleeding from a vein is almost exactly the same as that used in arterial bleeding, except that in this case we apply the pressure to the vein on the side of the wound farthest from the heart. For an explanation of this we must glance at the diagram on the opposite page. The blood is traveling along the vein toward the heart, and so we meet it, and by pressure prevent it from reaching and coming out of the wound.

A common form of venous bleeding is from varicose veins. Varicose comes from a Latin word meaning "bent," and a varicose vein is one which is stretched, owing to the blood accumulating in the little pockets behind the valves. Instead of being even and smooth as a vein should be, the varicose vein has swellings or enlargements along its course like beads, and a slight injury will often cause the vein to bleed.

Varicose veins usually occur in the legs, and are due to various causes. Too much standing may give rise to varicose veins, and another very common cause is the wearing of tight garters. Boys and girls should always be careful that their garters are not tight. Very many people have had to suffer late in life because, when they were young, they or their friends did not exercise proper care over this apparently little but important detail.

In these days of motors it is well to know that the automobile gasoline tank is a first-rate assistant to the person who is trying to clean a wound. One of the best things with which a dirty or a greasy cut can be washed is gasoline. It should be applied with a clean cloth or sponge, of course.

If an emergency arises and there is no gasoline in the house, it is an easy matter to run out to the street and hail a passing motorist who will aid.

The next lesson in first aid is on page 5599.

HOW TO UNDERSTAND A SHIP

THERE are few things more deeply interesting than learning about the various parts of a ship and how they came to be called by their present names. Frequently we see some part of a vessel mentioned in a book or in the newspapers, and sometimes we have not the remotest idea of the meanings of the terms used. In this article most of the more commonly mentioned terms are fully explained, so that all of us can understand them.

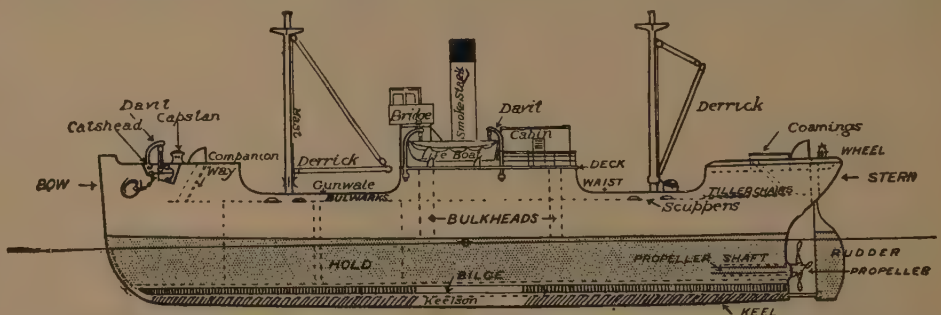
If we turn to page 342 we can see how sailors make their knots, while on page 3378 we see the methods by which they splice ropes, and on page 4086 and succeeding pages we learn the names of the different kinds of ships and sails, so none of these things will be dealt with here.

As we all know, the body of a ship without the masts is called the *hull*, which comes from the word hole. The hull is simply a big hole with a bottom and sides, enabling it to float on water. The word *hold* also comes from the word hole. It is now applied only to the inside part of the hull where goods are stowed during the voyage. The *keel* is the long beam which goes along the bottom of the ship in the middle. In battleships and steamers this part, of course, is of steel or iron. Its purpose is to give strength and steadiness to the ship. The word comes from the Icelandic word *kiolr*, which also means a keel, and is an interesting record of how the old vikings of the North gave some words to the English language. The *keelson* is the beam in the middle of the ship's bottom to which the keel is bolted. It really means "sill of the keel." The Swedish word for sill is *svin*.

Sailors talk of a ship floating on an *even keel*. This means that her decks are quite horizontal. When sailors speak of *fore and aft*, they mean the front of the ship and the back of the ship.

The *bulwarks* of a ship are the raised sides above the top deck. They have a rail on top. Any protecting wall is called a bulwark. The meaning of the word was originally "work made with the trunks of trees." The Danish word for the trunk of a tree is *bul*, and for work it is *vaerk*. In primitive warfare the readiest means of defense was to fell trees and to take refuge behind the fallen trunks. The *gunwale*, which is sometimes spelled *gunnel*, is the side of the ship just below the bulwarks. The old Saxon word *walu* meant a stripe, or plank, and the guns in the old battleships used to be mounted above the upper wales, so that the word gunwale came to be applied to them. The *bilge* of a ship is the very lowest part at the bottom of the ship under the hold. The water that always finds its way into this part is called bilge-water, and it is pumped out periodically. Bilge simply means bulge. It is the part where the bottom of the ship bulges downward as we see in picture 1.

The *bridge* is the raised structure in the middle of the ship, where the captain or pilot stands when he steers the ship. It is so called because it takes the form of a bridge. The helm is the steering apparatus, and in a modern ship it includes the rudder, tiller and wheel. The original meaning of the word is handle and the German word for handle is *helm*. The *rudder* is the flat, vertical blade at the back of the ship, by which the vessel is steered. It is also called the helm, but, properly, it is only part of the helm. The most primitive method of steering a boat is by putting an oar into the water behind the boat and moving the oar from side to side. This is why we have the word rudder. The Saxon word for oar was *rother*, and the German word for oar is *ruder*.



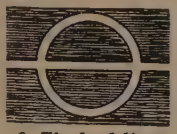
1. In this diagram of a typical modern steam-vessel we see the names of the principal parts of a ship.

In some boats the long piece of wood at the top of the rudder that forms a handle by which the boat may be steered is called the *tiller*. In Anglo-Saxon the word *tyllan* meant "to lead aside," and by moving the tiller a boat is made to go to one side or the other. In large ships the tiller-ropes or tiller-chains connect the rudder with the steering-wheel. The steering-wheel is a large vertical wheel, the movement of which operates the rudder from side to side and so steers the vessel.

In a small rowing-boat there is usually no tiller, but on top of the rudder there is a flat piece of wood with a rope at each end, and the boat is *steered* by pulling the ropes. This flat piece is called the *yoke*. The word came from the Saxon word *geoc*, which came from the Latin word *jungo*, which means "I join." The yoke of a rudder is not unlike the yoke used for oxen and horses in some foreign countries, and the word used is the same in both cases.

The cabins of a ship are the rooms where

the passengers or the crew live and sleep. The word *cabin* means a small hut, or cottage, and it is used for a small house on land as well as for the living-room or rooms of a ship. The word companion has a curious use on board ship. The *companion* is the window-frame, or skylight, through which light is admitted from the deck into the cabin or to the lower deck. The *companion-way* is the staircase that leads from the deck to the cabin. The *companion-ladder* is the ladder by which the ship's officers reach their cabin from the deck, and the hood placed over a companion-way is called the *companion-hood*.



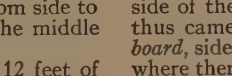
2. The load-line.

The origin of the word companion and its use on board ship are curious, and show how the meaning of a word changes through the course of years. It properly means "with bread," coming from the Latin words *con*, with, and *panio*, bread, and in ordinary use companions are people who have eaten bread together. In the old French language the word *compagne* meant the pantry in a galley, and then, as ships became bigger and more luxurious, the word stuck to the parts of the ship that we have seen. The part of a hatchway that protrudes above the deck is called by the curious name of *coamings*, but how this word came to be used is, at present, quite unknown. The *coamings*, or raised edges of the hatches, are designed in order to prevent the water on deck from running below.

3. The mast.

We all know that a beam is a long piece of wood, but when we hear people talk about the *beam* of a ship we may not understand what is meant. Beams are put across a ship from side to side of the hull, so as to give strength and stiffness, and these are still known as the beams, although in modern ships they are chiefly made of steel. But the word is more generally used to indicate the width of the ship, so that when we talk about a ship with a 40-foot beam we mean that its width from side to side is 40 feet. The ship's *waist* is the middle part of the ship.

The expression that a ship *draws* 12 feet of water, or that it has a *draft* of 12 feet, means that when the ship is lying in the water the depth of water from the bottom of the keel to the surface of the water does not exceed 12 feet. When the ship is loaded with cargo we talk about *load-water draft*, and when there is no cargo in the hold we talk about *light-water draft*.



4. A marline-spike.

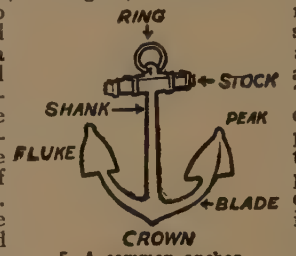
Upon the side of all British ships there is what is called the load-line. It is a mark like that in picture 2. It means that the captain must not permit his ship to be loaded enough to sink below the surface of the horizontal line going through the circle.

To *moor* a ship is to fasten it by ropes or chains to the quay, or to let out the anchor, so that the ship remains in one place. In the latter case we say that the ship *is at anchor* or that it *rides at anchor*. The word *moor* means to tie, and it comes from the Anglo-Saxon word *merran*, which means "to tie." The *moorings* of a ship are the various chains and ropes used to make a ship remain by the quay or at its anchorage.

Everyone knows that the *anchor* of a ship is an instrument of iron or other heavy material used for holding ships in any locality required, but everyone does not know that the word came to us through Anglo-Saxon and Latin from the Greek work *ankyra*, which means a hook. The common form of anchor, as shown, consists of the centre part, which is called the *shank;* the two curved arms which make the points are called *flukes*, and are thought to come from the German word for wing. The flukes join the shank at the place that is called the *crown*. The cross-piece at the head is called the *stock*, and the part of the shank above the stock is the *head*, upon which is the *ring*, or *shackle*, to which the rope or chain is attached. When we say that a ship *drags its anchor* we mean that the anchor when thrown into the sea, or *cast*, fails to hold on the bottom, and that the ship moves along with the wind or current, dragging its anchor with it. The anchors and the chains or ropes attached to them are called *ground-tackle*. (See pictures 5 and 6.) The two words *windward* and *leeward* are frequently used. The former almost explains itself. Windward means the direction from which the wind is blowing, and leeward means the direction to which the wind is blowing. The word *lee* means "shelter," and comes from the Anglo-Saxon word *hleo*. The lee side of a ship is the sheltered side. There are two other words that go together in nautical language. They are *starboard* and *port*. The words used to be *starboard* and *larboard*, but these were too much alike in sound, and there were accidents because sailors sometimes misunderstood orders, so the word *port* was adopted and is used instead of larboard. The rudders of old ships were frequently a little to the right side of the ship, and the right side of the ship thus came to be called the *steerboard*, or *starboard*, side. The left side of a ship was the side where there was no rudder, and it was therefore called the *leer-board*, or *laer-board*, side, *lear* being an Anglo-Saxon word meaning "empty." The right and left sides of a ship mean the sides on the right and left hand when we stand on the ship looking toward the bow. The *stern* of a ship is the back part. Stern means steering, so no explanation is necessary as to why the word stern came to be used. The *bow* of a ship is the front end, and it comes from the Icelandic word for the bow of a ship, or for a shoulder. The *bowsprit* is the name given to the spar which projects from the front of a ship. The word sprit means "spar," so that the bowsprit means the spar at the bow. The *catsheads* are two strong beams projecting from each side of the bow. Their purpose is to enable the anchor to be raised and lowered without touching the side of the ship. Why they are called catsheads is now a mystery.

The *galley* of a ship is the cook's quarters and also the cooking-stove, but it originally referred to a ship that was rowed by oars, which were usually worked by slaves or convicts. It is still used as the name for the large boat used by the captain of a man-of-war. If we have been on board a ship, we must have seen the small boats that are suspended from bent iron posts, that are turned round when the boats are to be lowered into the sea. These bent posts are called *davits*, a word which was originally *Davids*. The reason why they were called Davids is now quite unknown.

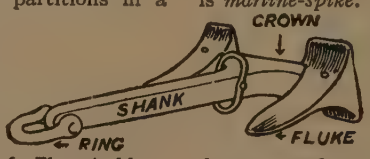
The *capstan* on a ship or on a wharf, is a revolving drum upon which ropes or cables are wound. The anchor is raised, or *weighed*, and lowered, or *cast*, by the help of a capstan. The Latin word *capistro* means "I tie with a halter," and this word traveled to us through France, undergoing changes during the course of hundreds of years until it became capstan. On ships of large size there is always a kind of gutter round the edge of the deck. The water that falls on the deck runs into this gutter, and there are holes through the side of the ship by means of which this water is discharged into the sea. Both the gutter and the holes are called the *scuppers* a word which comes from French and Latin and means "spitting out."



5. A common anchor.

In loading and unloading a ship the *derrick* is used. The derrick is the hoisting apparatus, and consists of a swinging spar attached to the mast and worked by ropes, as we see in picture 1. The origin of the word derrick is gruesome. It was the name of an English hangman about three hundred years ago.

As a package is being hoisted out of the hold and is suspended from the end of the derrick, it may suggest the work of the man whose name it means. The partitions in a ship are usually called *bulkheads*. They are generally made water-tight, so that a leak may be prevented from flooding the entire ship. Bulkhead means the head, or end of a bulk, which, in one sense, is used to mean the hold or hull of a ship. We all know what masts are. The word *maest* in Anglo-Saxon meant the stem of a tree, and, as what we now call masts were made from the stems of trees, it was quite natural that they should be called by their present name.



6. The stockless anchor, as used on most liners and battleships of the present day.

The *rake* of a mast is the distance that it leans backward. Masts are not perpendicular; they always lean back a little. The Scandinavian word *raka* means "to reach," and the word rake came to be used because the mast takes a slanting position. The word rake is also used to mean the slope of the bow or stern of a ship from bow-rail to keel, or from stern-rail to keel. The *gaff* is the spar attached at one end to the mast and having a trysail attached to it. We see a trysail and gaff on page 4086. The word is supposed to be derived from the Gaelic word *gabh*, which means "take," but it is not clear how it came to be used for the spar to which it is applied. The longer spar at the bottom of a trysail is the boom, a word which comes from the Dutch word *boom*, meaning a tree. The *crosstrees* are short spars fixed across the upper ends of the lower masts and top masts, as we see in picture 3. They are used to support the upper rigging. The first part of the word describes the position in which they are placed, and the second part—the word tree—came to be used because they were made from parts of a tree. The *trestle-trees* are other cross-pieces that support the crosstrees. The *cap* is the metal fitting that enables the lower mast to be joined to the upper mast. It is easy for us to understand how the name came to be applied, because the fitting is at the top of the lower mast. The *truck* is the circular piece of wood at the point of a mast, pierced with holes through which the ropes used to hoist flags are put. It is called the truck because of its shape, the word being derived from the Latin word *trochus*, which means "wheel."

Perhaps one of the commonest words we meet with in connection with a ship is *forecastle*, the term applied to the foreward part of the upper deck. Generally, the place where merchant sailors eat and sleep is called the forecastle, or, as seamen say, foc'sle. At one time war vessels were built with a short upper deck that was elevated like a castle to command the enemy's deck. As this was in the forepart of the boat, we can easily see how it came to be called forecastle. Right at the other end of the ship is the *poop*, or deck, built at the stern of the boat. The *poop-cabin* is naturally the cabin directly underneath. Another common word used by sailors and by writers about the sea is *marline-spike*. It is a spike or pointed iron pin (see picture 4) used in *marling*, or separating strands of rope as they are being spliced. A *marline*, consisting of two strands loosely twisted, is a small rope for winding around thicker ropes, and comes from the Dutch word *marren*, which means "to bind."

There are many hundreds of words used about a ship, and we have been able to consider only a few of them. For instance, the word ship itself came to us from our Anglo-Saxon forefathers, who in their language called it a *scip*, which we have transformed into the word we now use.

Then the word *deck* means a cover, and comes from the Danish, where the word is spelled *dek*, and is taken from the verb *dekken*, meaning "to cover." The deck is simply the cover of the hull. All these words may refer either to sailing ships or steamships. Every steamship has a smoke-stack, which is also called a funnel. If we live inland where we do not see real ships, we can pick out and name the different parts in the ship pictures we see.

FEATHER COLLECTION FOR BIRD-LOVERS

THE cruel habit of shooting every rare or pretty bird that might be seen flying in the air, or perching on a tree, or resting on the water, is slowly passing away as our knowledge increases. It was at one time supposed to indicate a love of nature if a person had a large number of stuffed birds under glass cases in his house—that is, if he himself had killed the birds or had encouraged someone else to kill them by paying money for such objects.

A COLLECTION OF FEATHERS

Now, however, many boys and girls are members of a national organization which pledges protection to birds. Most of us are wise enough to know that it is much better to let a rare or beautiful bird live to delight us and others by its song, or its graceful flight, than to kill it and have it stuffed badly, as is usually the case, and put under glass. If we want to study birds at close range, we can always go to a museum for the purpose, where, speaking generally, they are much better stuffed and mounted than in private collections.

If we are lovers of birds and want to start a collection of some kind bearing upon our hobby, we can make a really valuable and instructive museum by collecting the feathers of birds. Of course this must be done in a proper way. No mere jumble of all sorts and conditions of feathers is of any use, nor would it be at all interesting or beautiful. We must get the right kind of feathers, and must arrange them all in order.

WHEN FEATHERS ARE PLENTIFUL

The beauty of making a collection of feathers is that we do not have to kill the birds, and this in itself must be an immense satisfaction to every true lover of nature. Feather-collecting is, of course, a hobby more especially for the country, and the best time to pursue the hobby is during the autumn and winter months.

In early autumn the birds are molting, and we may pick up in the fields and by the roadside many feathers that form excellent additions to our museums. Then, later in the autumn, many an unhappy bird comes to grief on his passage to the sunny South, and we may often find, lying about, the bodies of birds that have been killed by flying against telegraph wires. In such cases we get not merely isolated feathers, but whole wings. We may often find, too, the remains of smaller birds that have been pounced upon and killed by minks or hawks, and here again we can sometimes obtain complete wings in excellent condition.

Although feather-collecting can be best carried on in the country, it is not confined to the country. It is a hobby that we can practice in the suburbs of large towns, and many a pretty and useful feather for our collection may be found in the public parks. Most park-keepers will be quite willing to give us any feathers that are lying out of our reach, if we tell them why we want them. Birds begin molting just after the breeding season, and one or two pairs of wing feathers are changed at a time, which allows all the wing feathers to be changed during the season, ready for the migrating period, without affecting the balance of the bird in flight. For their weight, a bird's wing feathers are among the strongest things in all nature.

HOW TO KEEP FEATHERS

There are various ways of keeping the feathers. Small ones may be mounted between old negative glasses, which enables both sides to be examined very easily; but everyone has not a supply of the glass sheets available. Perhaps the cheapest method is to mount the feathers on sheets of stiff cartridge-paper, keeping them in position with thin strips of gummed paper—ordinary stamp-edging will do very well. Or slits may be cut in the mounts, and the feathers slipped through. It is advisable to dust the collection of feathers with a good insect powder or with a moth preventive.

The feathers should always be placed roughly in the position they occupied in the bird's wings, or on its body; and as we find fresh feathers, so we can gradually fill up the vacancies in our collection. A separate sheet of paper should be used for each bird. It is astonishing how pretty and effective a collection of feathers arranged thus, in scientific order, will appear. Each wing feather has a name; and the correct names or numbers should be written against them, and the name of the bird in the top right or left-hand corner of the sheet. We can find the proper names of the different feathers by consulting any good bird book at the local public library.

WHAT THE FEATHERS TEACH US

A good deal of valuable natural history is to be learned from a collection containing wings and wing feathers. When the feathers are arranged in order we can see the general shape of the wing, and from that shape we can learn a great deal about the habits of the bird.

We should expect birds of the weakest flight to have the simplest kind of wings, and this is the case. The wren, for instance, with its short, whirring flight, has a wing uniformly round in shape. The partridge, too, has a wing remarkably like the wren's in shape, and it also flies very much as the wren flies. Then, by a little use of our reason, we should expect birds of weak and short flight like these to live a good deal upon the ground, and that is the case; so that from the wings we can actually reason out the habits of the birds.

On the other hand, if a bird has a long, sharp wing, something like an arrowhead in shape, we should expect that it would be a swift flier, its wings cutting through the air like a knife-blade. And we should further reason out that birds of this kind are forced to fly rapidly in order to protect themselves, and must therefore be particularly the victims of birds of prey. This is perfectly true. The wings of teals and plovers are of the shape described, and their life is one long, sharp flight to escape from hawks and other birds of prey. These are only a few of the many interesting lessons that we may teach ourselves from a good collection of feathers.

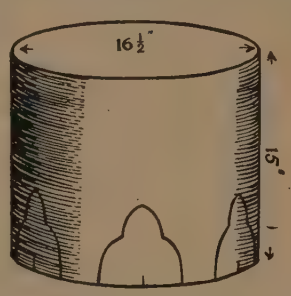
A TABLE MADE FROM A CHEESE-BOX

WITH a discarded cheese-box—the large kind of cheese-box that holds the biggest cheeses made—we can, with very little trouble, make a very convenient low table that will do well to stand in the hall or parlor, or that will do very nicely in the nursery, as it will be just the size for small children to use comfortably at their play. First we get an empty cheese-box, which will be about 15 inches deep and about 16 inches across. Any box having about these dimensions will be satisfactory. We take off the lid and mark the edge of the top where the lid was into eighteen equal spaces.

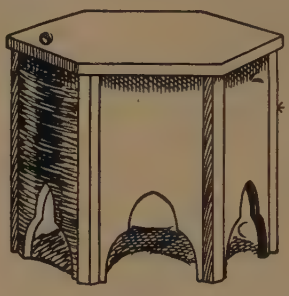
1. The paper design.

The best way to do this is to put a string right around it, and then measure the length of the string afterward, dividing the length by 18, which will give us the length between each of the eighteen marks that we shall make. The length of the string in measuring the box we have described will be about 50 inches, and the distance between each of the eighteen marks will therefore be just about 2¾ inches.

Whatever the distance between the marks may be, we make a design which must measure double that distance, so that the design will probably be about 5½ inches across. Picture 1 shows such a design. We place it upon the side of the box close up to the edge and between two of the marks we have already made. Then we make a pencil-line on the box right round by the edge of the design. Then we do this right around the box six times in all, missing one clear space between each two designs as indicated by the finished table in picture 3. Now, with our fret-saw, we cut out all the shapes we have made on the side of the box. This will give us six legs for our table, with ornamentation between the legs. Now we may strengthen the legs with advantage by having six strips, 1 inch broad and ½ inch thick, which we put on outside, in the middle of each leg, screwing them on with ¾ inch round-headed screws from inside the box, and afterward sawing off the ends square with the bottom of the legs and with the top of the table. Now we make a top for the table, putting on planed pieces of wood ½ inch thick, and cutting them from corner to corner of the leg strips, thereby making a six-sided table-top. If the top is all in one piece, so much the better. If not, the pieces of which it is composed should be planed quite square on the edges and fastened together while they are being put on. They should be screwed on with ¾-inch screws from inside the box—that is, from the underside of the table. These screws will not be long enough to show through the table-top. Plenty of screws should be put in so that the top will not warp easily. After the edges have been sawed off they should be planed and then sandpapered, after which the table may be stained, or varnished, or enameled any color desired, to make it look attractive, and to preserve it.



2. Cheese-box with designs cut.

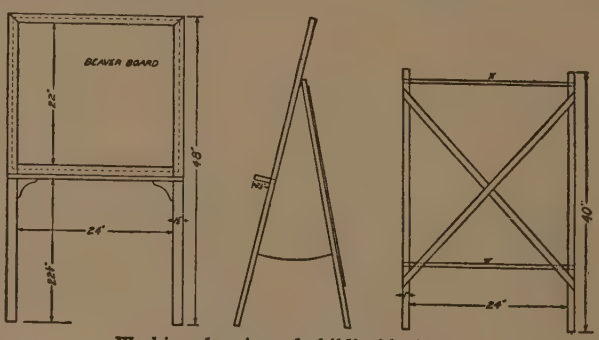


3. Cheese-box table when finished.

HOW TO MAKE A CHILD'S BLACKBOARD

A TOY which is inexpensive and interesting is the much-sought blackboard. Nearly every child wishes to own one. It is simple and therefore quite easy to construct. The blackboard shown in the picture affords ample opportunity for the boy to do some planning if he desires to elaborate upon this design.

The material used may well be ⅞" x 1½" oak although other woods can be used. A piece of wall-board painted with blackboard paint will serve for the writing surface. The frame should be rabbeted deep enough to allow the blackboard to be covered in the back with ¼-inch soft white pine boards for the purpose of stiffening it. The stretchers, which are marked *A* and *B* in the back view of the drawing, are ½-inch dowel pins. The cross strips are ⅜" x 1" pieces of wood.



Working drawing of child's blackboard.

When this blackboard is stained a dark color and given several coats of varnish it gives a most pleasing appearance. Any little girl or boy should be proud to own and use it. It will be a joy to work arithmetic upon it.

THE NEXT THINGS TO MAKE AND TO DO ARE ON PAGE 5111.

Photo, Ewing Galloway.
Orchard House, Concord, where Louisa May Alcott's stories were written.

RECENT AMERICAN WRITERS

THERE is no dividing line between the centuries, and, as we may see by looking back, some of the writers of whom we have been speaking were living when our century began, and some of them are still alive and form a link between our times and the past. But besides these writers, you will notice as we go on that many of the authors who are famous in our times were born in the nineteenth century. Moreover, we have not yet mentioned some writers who were well known before the year 1900 but whose best work has been done since the twentieth century began.

Owen Wister, born in 1860, is best known for The Virginian, the story of a chivalrous cowboy in the Wyoming country. The book is one of those that are hard to lay down until one has finished reading them, and it gives a pretty good picture of part of the picturesque life of the frontier before it moved on so far to the west that it was lost in the Pacific. Of his other stories, Philosophy Four is, of course, a college story; Lady Baltimore does not interest young people very much; The Pentecost of Calamity was written about the World War.

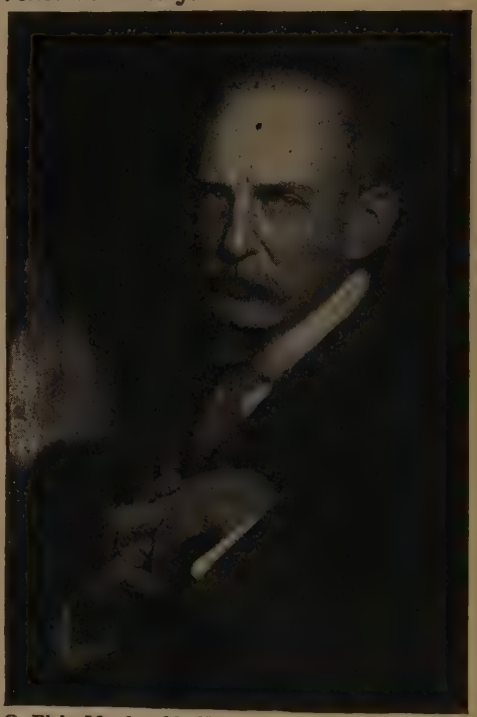
Another writer who is connected in our minds with the World War is Richard Harding Davis, who is famous chiefly as a war correspondent, but who wrote very good short stories—Gallegher and Other Stories, Real Soldiers of Fortune, With Both Armies in South Africa, and The Boy Scout. He was in both the Spanish American War and the South African War as a war correspondent, and was one of the first correspondents to reach the front in the World War, during which he met his death in 1915.

When we speak of fiction, we do not, of course, mean that the stories and novels in literature are purely imaginative. Men and women who write books must have knowledge gained from life or from other books, and generally from both. The facts that they know they idealize or make beautiful by using their imagination, or perhaps from many facts they make up stories that are so like life as to be realistic, and, in any event, when a writer makes a book out of his knowledge of the life of his own times he helps us to understand their history. Such a writer was Hamlin Garland, who remembered the hardships of pioneer farm life in the Middle West. He was born in Wisconsin in 1860 and spent his early youth in Iowa. In his boyhood he plowed and sowed, went

Owen Wister.

to school when he could, and in 1881 graduated from a seminary in Osage. Three years later he went to Boston, where he taught school and studied, and soon began to write. In the prairie sections in which he had passed his boyhood there was none of the excitement and romance of the mining camps and towns of the Far West, and none of the picturesque gaiety of the cattle regions to break the monotony of pitiless toil or what was often the grinding poverty of farm life. Garland was able to put the feeling of toil and poverty into his books, yet he loved his native section and contrived to put his love into them also. His best book, A Son of the Middle Border, is really the story of his own life, but we may call it, not only the autobiography of a man, but also a biography of the early days of part of the Middle West. His first book, Main Traveled Roads, is realistic fiction. Rose of Dutcher's Coolly is good reading.

From Garland's stories of pioneers, by a man who was himself a pioneer, we must turn to the novels of a man who was in some respects his opposite. Francis Marion Crawford, who wrote his best books about society in the ancient city of Rome, was the son of an American sculptor and a nephew of Julia Ward Howe, who wrote The Battle Hymn of the Republic. He was born in Italy in 1854, but when he was about eleven years old his parents brought him home to America, and he went to school at Concord, New Hampshire. However, later on he went to the universities of Cambridge, Heidelberg and Rome, and settled down in Rome, where he spent the greater part of his life and where he died in 1909. He was a polished man of the world, and had for his friends artists and musicians, poets, great nobles and diplomats. It is said that he knew Roman society better than any other man of his time, and so it is no wonder that he built stories out of this brilliant social life, which was of an older and more stately fashion than he would find even in Rome to-day. Although his books are almost of our own time, life has changed so quickly that they seem like stories of a bygone age told by a contemporary of the men and women of whom he wrote. He wrote Saracinesca, Sant' Ilario, Don Orsino, and A Roman Singer toward the end of the nineteenth century, but The White Sister and a number of his other stories came after 1900. His fame rests on his fiction, but he has also written history in Roma Immortalis and Gleanings from Venetian History.



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F. Marion Crawford.

AN AMERICAN AUTHOR WHO MADE HIMSELF FAMOUS IN ENGLAND

Henry James, the next writer of whom we shall speak, was born in Albany in 1843. He began to write short stories in 1866, but his most important novels were written after 1900, and although he was well known, especially for his short stories, years before our century began, he seems to belong to it. When he was about twelve his parents took him to Europe, and he received his early education during their wanderings in England, Switzerland and France. Finally his family settled in Boston, and in time his brother William became a famous professor of psychology at Harvard; but Henry James never got the real feeling of American life, and soon went to live in England, where he became very famous. He never married, and seems to have led a rather lonely life without wife or child, and although he was gentle and lovable and greatly admired, we might almost look on him as a man without a real country or a real home. Always in his books we feel as if he were an outsider looking on at life. His short stories, novels, essays, and studies of men and women of letters are of great interest. They are brilliant, sometimes they are full of irony, but they never make us feel either glad or sorry. His best short story is The Portrait of a Lady, and his best novels are The Wings of a Dove, The Golden Bowl, and The Ambassadors. In 1915 he became a British subject as a protest against the neutrality of the United States in the early years of the World War, and died in 1916, worn out by doing relief work during those terrible years.

Some critics say that Edith Wharton, who was born in New York in 1862, was greatly influenced in her writing by Henry James. Whether this is true or not, she is among the best American authors of our time. Like Henry James and Marion Crawford, she has spent a large part of her life in Europe, where she received much of her early education. But unlike Henry James, she made her home in the United States for years, and took an active part in the life of New York, Newport, Lenox, and of Boston, where she lived after her marriage to James Wharton in 1885. About 1911, however, she definitely decided to make her home in France, and has lived there ever since. During the World War she took a very active part in the work for the homeless and helpless women and children of France and Belgium, and in recognition of her work the French Government gave her the Cross of the Legion of Honor. Some of her books, like The House of Mirth and The Mother's Recompense, show that riches alone do not bring happiness, and that there may be much sadness and disappointment in the lives of people who seem to live only for pleasure. The Age of Innocence and Ethan Frome are her masterpieces.

SHORT STORIES BY O. HENRY

The beautiful finished writing created for us by Mrs. Wharton is in strong contrast to the short stories of O. Henry, who at one time was hailed as a rival of Kipling in the short-story field. His real name was William Sydney Porter, and he was born in 1867 in Greensboro, North Carolina, but did not write his first short story, Whistling Dick's Christmas Stocking, until 1899. Between that year and his death in 1910 he wrote dozens of short stories. Many of them are about life in New York City, but in some of them he told of places and people in parts of South America, where he lived for some years. On the whole, his books are still liked

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Henry James.

by large numbers of men and women, but though he wrote a few stories for boys, as a rule young people do not care for him very much.

A MAN WHO KNEW THE WESTERN TRAILS

They are much more interested in the books written by Emerson Hough (pronounced Huff), who was born in Iowa in 1857 and lived until 1923. He graduated from the University of Iowa and became a lawyer, but before many years turned to newspaper-writing. In order to get material for his articles he traveled over a great part of the continent of North America and learned about the old trails, often made by the Indians or the buffaloes, over which the pioneers made their

O. Henry.

long and perilous journeys; he knew the cattle trails and the way taken by the early adventurous explorers, and out of all this knowledge he wove such stories as The Magnificent Adventure, which tells the story of Lewis and Clark's expedition, The Covered Wagon, and North of 36.

Another writer of Western stories is Stewart Edward White, who was born at Grand Rapids, Michigan, and educated at the University of Michigan and Columbia Law School. Most boys will like his stories, set in the great forests of the Northwest or at the lonely trading-posts of the fur companies. They are full of interest, and the background is beautifully done. Some of them are The Westerners, Conjurer's House, The Silent Places, The Riverman, The Forty Niners, and Daniel Boone.

THE WRITER OF THE PENROD TALES

Booth Tarkington ranks high in the excellence of his writings, and that makes it all the more interesting that he has written books about boys. He has not grown too old to remember the time when he was a boy, and when he wrote Penrod, Penrod and Sam, and Seventeen, he was able to go back in spirit to his boyhood and youth and to write of the pranks of a boy of eleven and a youth of seventeen with the understanding of a boy and the sympathy of a man who had not forgotten the things that he thought and did in the days when he was young. He was born in 1869 in Indianapolis, where his father was a lawyer, and as a youth was sent to Philips Exeter, Daniel Webster's old school. He graduated from Princeton in 1893, and then went home, and, like Hawthorne, practiced the art of writing until he was able to write such a story as The Gentleman from Indiana, which was published in 1899. Out of the twenty or more books that he has written, grown people generally choose as the best Monsieur Beaucaire, The Flirt, The Turmoil, The Magnificent Ambersons, and Alice Adams.

Dorothy Canfield, who became Mrs. Fisher, is a significant figure in American literature. Born and educated in the Middle West, she gained the degree of doctor of philosophy from Columbia in 1904, and then traveled extensively in Europe, helped greatly by her languages, in which she is unusually proficient. She has written Made to Order Stories, which she told to her young son before writing; some tales of people, The Bent Twig, Hillsboro People, The Brimming Cup; studies from her three years' war work in France, Home Fires in France and The Day of Glory; and made a notable translation of Papini's Life of Christ from the Italian.

DR. LAVENDAR AND HIS PEOPLE

Before the quaint little town of Manchester, Pennsylvania, was swallowed up by the city of Allegheny, Mrs. Margaret

Deland preserved its memory in her delightful Old Chester Tales and Dr. Lavendar's People. She has also written long novels, such as The Iron Woman and others, which deal with life in the industrial towns in her own state. These stories have a good deal of sadness in them, for Mrs. Deland has the power of seeing why people make mistakes in their lives, and, in spite of her large sympathy, in pointing out these mistakes and the results that are bound to follow them she inevitably had to deal with sadness. Probably the stories of Old Chester will be remembered longer than her other stories, for in them she has brought out characters of a rare and beautiful type, which, though they are few in number, may be found almost everywhere and are loved wherever they appear.

Even now vestiges of simple life are to be found in out-of-the-way places, and men like Joseph Crosby Lincoln are using the art of writing to keep it in remembrance. Lincoln was born on Cape Cod in 1870 in the town of Brewster, which was inhabited chiefly by seafaring men and their families, and it is of such people, their simplicity and humor, their sturdy independence and their philosophy of life, that he has made a record in his books. His first long story, Cap'n Eri, was published in 1904 and was an immediate success. This book, The Portygee, Galusha the Magnificent, and Dr. Nye of North Ostable are his best books, and to these should be added Fair Harbor and Queer Judson. He himself would probably be the first to say they are not great literature, but they are all good reading.

TWO HUMORISTS AND A SOUTHERN WRITER

We have spoken of the humor in Lincoln's stories, and perhaps this is a good place to consider two humorists of our day. The first of them, George Ade, who was born in Indiana in 1866, believes in making life easier and the world better by laughing at it. He uses his Fables in Slang, which he began to write in 1900, to hit at wrongs, hoping to help to laugh them out of existence. Don Marquis, the second of the two, deals more in satire.

The name Don Marquis, attached for years to a humorous column in one of the New York newspapers, is by many people believed to be a *nom de plume*. It is, however, the real name of Donald Robert Perry Marquis, who was born in Illinois in 1878. He began his life work by writing for newspapers, and a large part of his work is short-lived, scattered about in various papers and forgotten. But the best of it is to be found in such books as The Cruise of the Jasper B., Carter and Other People, Noah an' Jonah an' Cap'n John Smith, The Revolt of the Oyster. His satire is exceedingly clever as well as funny, and though a good deal of his poetry is meant to be funny verse, he has published at least one volume of good serious poetry—Dreams and Dust.

Ellen Glasgow, who was born in Richmond, Virginia, in 1874, writes of life in the South and the revival of the southern

Photo, Bachrach.

Margaret Deland.

states from the prostration that followed the Civil War. She may almost be classed with Edith Wharton and Booth Tarkington, and is one of the writers of our day whose work is almost sure to last, and her novels will probably be read in the future as part of the best literature of our time. Among her earlier books, The Deliverance is one of the best. Then there are The Romance of a Plain Man, The Voice of the People, The Miller of Old Church, and Barren Ground.

THE CREATOR OF FRIENDSHIP VILLAGE

Zona Gale built Friendship Village in her own mind and then peopled it with characters whom she had met, and made them do the things she thought they ought

to do, not what they probably would have done in real life. She was born in Wisconsin in 1874, and after her graduation from the University of Wisconsin became a newspaper writer. She got on the staff of a New York newspaper, and for years kept on writing novels in her spare time with very little encouragement. But in 1911 her story The American Dawn took the prize in a short-story contest, and from that time on her way was comparatively easy. She is best known in America by the Friendship Village stories, The Loves of Pelleas and Etarre, and Miss Lulu Bett, the story of a poor little drudge and what she made of her life. Her best writing, however, is in a story called Birth, which is a much greater work than anything else that she has done.

Some of the Later Writers

So many authors are to-day writing books for our instruction or our delight that it is impossible to speak of them all even by name, and to give the names of all their books would make our story like a library catalogue. But we must not forget Edna Ferber's story of So Big, the boy whose mother spent her life working for him and who had not grown big enough to measure up to the greatness of her character.

Joseph Hergesheimer, who was born in Philadelphia in 1880, is a writer of considerable importance. He is best known by Java Head, a tragic story of life in a New England town at a time when its sailing ships were seen on all the seven seas and brought back beautiful things from every quarter of the globe.

Theodore Dreiser, of Terre Haute, Indiana, where he was born in 1871, is the author of a number of well-written but rather unpleasant novels about rather unpleasant people, and it is a question whether many people will care for them after he ceases to write.

The books written by Sinclair Lewis may come into the same category, and yet again they may last. Sinclair Lewis, who comes from Sauk Center, Minnesota, knows small towns well, and so when he wrote a story of life in such a town and called it Main Street, it took the country by storm. Everyone read the book, everyone talked about it and took sides on the questions which he raised, and some readers almost made a personal matter of them. He has written a number of other books, and of these Babbitt and Arrowsmith are the best. Just as Main Street is the story of an ordinary town, Babbitt is the story of an ordinary man; while Arrowsmith is a young man who, after many troubles, seems at the end of the book to be in a fair way to become a noted scientist. In 1930 Mr. Lewis was awarded the Nobel Prize in literature.

Henry Sydnor Harrison wrote Queed and V. V.'s Eyes just before the World War. These books showed promise of better things, but he went to the war as a correspondent, and for some time after he came back critics said he had lost his gift. Then he turned the tables on them by writing Andrew Bride, a fine story about a critic who went to live in Paris to lead, as he supposed, a fuller, richer life, only to learn the meaning of patriotism there and come home a wiser and a happier man.

Christopher Morley, a younger man than most of the writers of whom we have been speaking, began by being an essayist, but before long turned to writing novels of an unusual kind. His early years were all spent under the influence of college life, for his father was a professor of mathematics at Haverford, Pennsylvania, where Christopher was born in 1890. He graduated from Haverford in 1910 and spent the next three years at Oxford University as a Rhodes Scholar. At the end of that time he came back to the United States and went into a publisher's office. He immediately began to write short essays, light verses and poems, and then, as we have said, turned to novels. Thunder on the Left, his best story, is a beautiful book, beautifully written.

Elinor Wylie was distinguished both for her verse and for her finely wrought, beautiful prose which has something of the quality of poetry in its careful sentences. She was born in 1885, and as a very young girl planned to be a writer. It was not until her twenty-seventh year, however, that her first slim volume of poems was published, and not until she was thirty-seven, and had married William Rose Benét did her lovely, fragile genius come to full flower in such prose fantasies as Jennifer Lorne, The Venetian Glass Nephew and The Orphan Angel. Shelley was her favorite poet and she gave to his memory an extraordinary devotion. She died in 1928.

Willa Sibert Cather was born in Virginia in 1876. At the age of eight she moved with her parents to Nebraska and there she learned to know and love the vast plains of the Middle West and the hardy Americans of foreign descent about whom she wrote in O Pioneers, My Antonia and other novels. After graduating from the University of Nebraska she did newspaper and magazine work, taught school and travelled extensively as preparation for her writing. Some of her best-known books are Youth and the Bright Medusa, The Professor's House, Death Comes for the Archbishop and Shadows on the Rock.

Gertrude Atherton, a native Californian who has spent most of her life in Europe, is the author of many interesting novels. Among them are The Immortal Marriage, The Jealous Gods, The Conqueror, Ancestors and The Californians. Most of her stories have a historical background.

Sherwood Anderson was born in Ohio in 1876, third of a family of eight. His parents were poor, and when he was fourteen he left school in order to help support the household, but he was unhappy in the industrial and commercial world and one of his first novels, Marching Men, reflects some of his dissatisfaction with factory conditions. Other novels which have been widely read are Winesburg; Ohio, Poor White, A Story Teller's Story and Dark Laughter. Anderson's books are not generally liked by children.

Hervey Allen is best known for his long, romantic novel, Anthony Adverse; but he has also written poetry, critical prose and other fiction. His study of Edgar Allan Poe, which he called Israfel, is now regarded as one of the most authoritative works on Poe. Mr. Allen was born in Pittsburgh, Pennsylvania, in 1889. He entered the United States Naval Academy at Annapolis but resigned, and received his degree from the University of Pittsburgh. He served with distinction in the World War, until he was seriously wounded.

Fannie Hurst was born in 1889, in Hamilton, Ohio, the only child in a well-to-do family. She read enthusiastically from very early childhood and began to write verse and fiction in high school. After graduation from Washington University she went to New York and for over two years wrote and sent out to publishers manuscripts which were invariably returned. To gain experience she worked as nursemaid, waitress, salesgirl and factory hand. Finally a story was accepted and after that success came swiftly. She is known for her short stories and for novels, of which the best are Star Dust, Lummox, A President is Born, Appassionata and Back Street.

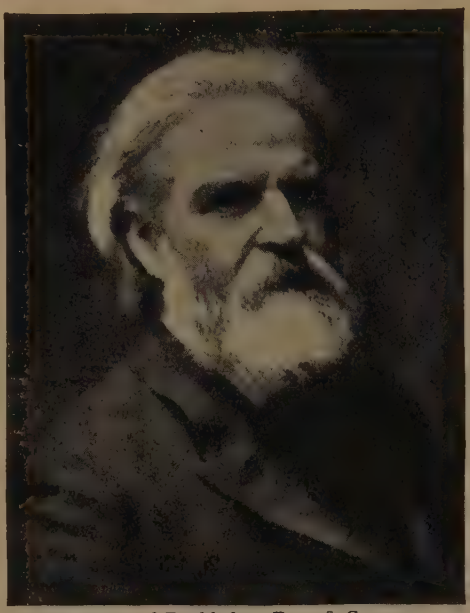
The Poets of Our Century

Since we spoke of the poets of the South we have said nothing of the writers of poetry, yet there is a great deal to say. Edwin Markham, the oldest of our living poets, was born in Oregon City in 1852. His most famous poem, The Man with the Hoe, was written in 1899. Lincoln, the Man of the People, is another stirring product of his pen.

Edgar Lee Masters, who was born in Kansas in 1869, is a Chicago lawyer. In the Spoon River Anthology, for which he is best known, he took for his theme a country town and wrote in free verse what he thought might be true epitaphs for people who had died.

Amy Lowell was one of the writers of what is called the new poetry, to which free verse belongs. Sometimes she wrote in ordinary verse rhythm, sometimes in free verse, and sometimes in what is called polyphonic, or many-voiced verse, in which she used almost every kind of

Amy Lowell.



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E. Markham.

rhythm, even the rhythm of prose. She was born in 1874 in Massachusetts. Her first important volume of poems, Sword Blades and Poppy Seed, was published in 1914, and after that came Men, Women and Ghosts, Can Grande's Castle, and Pictures of the Floating World. After her death in 1925 her last volume, What's O'Clock, was published.

Many consider Edna St. Vincent Millay our greatest living poet. She was born in Maine in 1892, and published a volume of poems immediately after graduating from Vassar in 1917. She has written about a dozen volumes since, including the words for an opera, The King's Henchman. In 1922 she was awarded the Pulitzer Prize for poetry. Her poem, Renascence, though written when she was still a young girl, remains one of her best.

Edwin Arlington Robinson was born in Maine in 1869, and did not enter Harvard until he was twenty-two. Soon after he left the university his poetry attracted attention but he was faced with the problem of earning a livelihood. For five years he held a place in the New York Custom House. The Town Down the River, The Man Against the Sky, Merlin, Lancelot, and The Three Taverns established him securely in the front rank of contemporary American poets. Tristram, which in 1928 brought the author his third award of the Pulitzer prize for poetry, is called by critics the best among modern versions of the old tale told on page 2461. Modred and Matthias at the Door are among his more recent works. He died in 1935.

Conrad Aiken, born in Georgia in 1889 and educated in New England, has lived in many parts of the world, and now makes his home in England. He has published many volumes of lyrics, one of which, Selected Poems, won for him, in 1930, the Pulitzer Prize.

Robert Frost, the contemporary poet of New England, was born in San Francisco in 1875. When he was ten years old his father died, and his mother brought the boy back to her old home in Massachusetts. His adult life has had three major interests, farming in New England, teaching and writing the particular rugged verse for which he is famous. He uses plain words, and his philosophy is of the soil, so that his poems seem to be voiced by the typical silent, hard-working New England farmer touched for the moment with genius to express the thoughts that have long been buried in his soul. Frost has twice received the Pulitzer Prize.

A WOMAN WHO LIVED A STRANGE LIFE

Another New England poet whose work must be mentioned here, though she lived in another century, is Emily Dickinson. She was born in 1830 and died in 1886 in Amherst, Massachusetts. She was given a good education according to the standards of her day, but when she was only thirty-two years old she practically withdrew from the outer world, and after her father's death in 1879, never left her home. Her poetry which has been called America's major original contribution up to that time, was not published until after her death, and was not appreciated at first. Where most American writers of the nineteenth century looked to Europe for their inspiration and technique, Emily Dickinson drew upon her own emotional experiences and fashioned subtle yet sincere lyrics.

William Rose Benét, born in 1886, is a poet, critic and novelist. His brother, Stephen Vincent Benét, born in 1898, is best known for his long narrative poem, John Brown's Body, which tells the story of the Civil War in vigorous polyphonic verse; that is, the poet changes the rhyme and meter to fit the thought as the story marches along. As a result, John Brown's Body maintains its interest to the end.

Vachel Lindsay, who was born in 1879 and died in 1931, wrote colorful poetry, much of it experimental in form. It is meant to be read or recited aloud for the sound of his lines are as important as the pictures he produces. Carl Sandburg's work has something of the same tonal quality. Sandburg was born in the same state, Illinois, a year before Lindsay. Both are essentially poets of the Middle West.

Three contemporary American poets, Ezra Pound, Hilda Doolittle and T. S. Eliot, have chosen to live abroad.

Since we spoke of Jonathan Edwards among eighteenth-century writers, we have said nothing about philosophers. There is one modern writer who is not only a philosopher but an artist in literature. This is George Santayana; he was born in Spain in 1863, but came to the United States when he was only nine years old, graduated from Harvard and later was a Harvard professor. He has written poems, studies, essays and criticisms on books and his witty and trenchant style is delightful.

There is a special field of writing that has occupied many literary minds in this century. For lack of a better title we shall call these men and women commentators; their range is wide, touching upon men and women, politics and current events and trends in the world's life. Important among these is Walter Lippman, most of whose career has been in newspaper and magazine writing. He was born in 1889 and entered Harvard in 1906. He served, while a very young man, as secretary to the Mayor of Schenectady and his interest in politics probably began then. He is a liberal thinker, but sane and measured in his utterances. A Preface to Politics and The Political Scene are two of his books. H. L. Mencken is a commentator of a different sort. His notes on present-day manners and trends of thought are purposely violent, with the object of arousing discussion and perhaps action. He was born in Baltimore in 1880, and he has lived in that city most of his life, even though much of his work was centred in New York. George Jean Nathan was for a long time associated with Mencken, as joint editor of two magazines. Nathan was born in Fort Wayne, Indiana, in 1882, and was graduated from Cornell University after which he travelled and studied abroad. Like Mencken, he has had a long career in newspaper and magazine writing. His outstanding contribution is in dramatic criticism, and he is the only living American who is as famous in Europe as at home for his trenchant observations on the stage.

Some Writers of Essays and Criticism

Agnes Repplier is an essayist, wise and kindly. Brander Matthews, John Macy, William Lyon Phelps, Burton Rascoe, May Lamberton Becker and Henry Seidel Canby have written essays and criticisms of books that have often had powerful influence; May Lamberton Becker has given special attention to books for young people. It is good to form the habit of reading book reviews. The men and women who write them point out to us many interesting points in a book that we might otherwise miss; they show us what to look for besides the story, and enlarge our understanding of literature, in addition to helping us choose the best.

Some Important Writers for the Stage

The stage has always exercised a potent charm upon certain authors, and several Americans have written almost exclusively for the stage. Foremost among them is Eugene O'Neill. He was born, appropriately enough, in a Broadway hotel in New York City, in 1888. His father was a popular actor, and Eugene's early years were spent in the atmosphere of the stage. After high school he entered Princeton, but soon left, and there began for him a nomadic existence in which he tried many forms of work but gave them all up. He was a sailor, gold-prospector, actor, secretary and newspaper reporter. Finally his health broke down, and in his long months of convalescence the urge to write plays assumed a major importance in his life. Since then he has written about two dozen plays, most of which have been produced in New York. Many, in fact, have been shown in all the large cities of the world. Outstanding are Emperor Jones (which has been made into an opera), Anna Christie, Strange Interlude, Mourning Becomes Electra and Days Without End. His plays are not especially interesting to children as they reveal a bitter outlook upon life.

Maxwell Anderson is an American playwright who is fascinated by the dramatic possibilities in history. His first impor-

tant play, written with Lawrence Stallings, was What Price Glory, a comment upon the World War at once bitter and comic. Saturday's Children followed, then Elizabeth the Queen, retelling a romantic episode in the life of Queen Elizabeth of England. Later he wrote Mary of Scotland and Valley Forge. Both Your Houses, a sardonic study of American politics, won the Pulitzer Prize for 1933.

Elmer L. Rice was born as Elmer L. Reizenstein, in New York City in 1892 and educated in the public schools of New York. In 1912 he was graduated with honor from the New York Law School; in order to secure his degree he had worked day-times and studied and attended classes nights. The desire to write plays, however, proved stronger than the wish to practice law, and in 1914, when he was less than nineteen years old, his first play, On Trial, was produced. This was the first dramatic work to employ the "cut-back" device. That is a familiar technique of stage and screen nowadays—showing a scene, then following it with a flash-back into the past—but it was first employed by Elmer Rice, a youth still in his teens. He has written several other successful plays, among them Street Scene, for which he won the Pulitzer Prize in 1929.

Rachel Crothers, born in Illinois in 1878, was interested in writing dialogue even as a very small child. She planned dramatic scenes for groups of paper dolls, and played out the stories, sitting on the floor and speaking the lines for each doll-actor in turn. Her interest in plays never left her, and in 1892, after graduation from the Normal University in Illinois, she attended a school of acting in New York, first as student, later as teacher. In 1903 her first play was produced on the New York professional stage, and since then she has seen almost thirty of her plays on the stage and some of them later in motion pictures. She has a fine talent for sparkling dialogue and a young writer would gain much from a careful reading of the witty, natural lines in her works, lines that are true to the characters who speak them, and that push forward the progress of the story.

Other notable contemporary playwrights are Philip Barry, Sidney Howard, Paul Green and Robert Sherwood.

A NEW FIELD WHICH HAS BEEN HARDLY TOUCHED

We should be able to give here the names of some authors of motion picture plays, but most good screen plays are adaptations of novels or stage dramas. There should be, and perhaps soon will be, a group of workers who are able to combine the elements of story, dialogue, scenic and sound effects so as to create scripts that are more original and more truly suited to motion pictures than adaptations from other kinds of writing. That may well be one of the most exciting vocations of the future.

Certain authors have given themselves over to a special style of writing, as Gamaliel Bradford and Katharine Anthony, who present biography in popular manner, and Charles B. Nordhoff who, in Mutiny on the Bounty and other works, reconstructs the past. An enormous amount of study and research is often necessary, before such a writer sets pen to a single sheet of paper. Each book may necessitate a whole year of investigation and perhaps travel.

James Branch Cabell has written a series of fantasies telling of spirited adventures in an impossible land, Poictesme. When he ended that series, he changed his literary name to Branch Cabell so his later works are known by the shorter name. Ernest Hemingway writes in short, quick sentences, stripped of graciousness, but his work is oddly exciting. Gertrude Stein, an American who has lived most of her life abroad, discards the rules of punctuation and many of the other conventions of writing. Her meaning is not always clear, even to adults. Thornton Wilder has an elegant, classic style. Paul de Kruif has made scientific knowledge as readable and as interesting as fiction. Van Wyck Brooks has written biography, history and criticism. A. Edward Newton, Thomas Beer, Mary Austin, Louis Bromfield, Floyd Dell, John Dos Passos, Alice Brown, Pearl Buck, Ernest Poole, Margaret Ayer Barnes, Julia Peterkin, Waldo Frank, Mathilde Eiker and Carl Van Doren have done sincere work.

There are many histories of American Literature but one stands out above the others. Vernon Louis Parrington (1871-1929), born in Illinois, but for more than twenty years professor in the University of Washington, published in three volumes, Main Currents in American Thought. Unfortunately he died before the third volume was quite finished.

THE NEXT STORY OF LITERATURE IS ON PAGE 5103.

Snowy Egrets over their nest.

BIRDS OF NORTH AMERICA

BIRDS OF THE SOUTHERN PROVINCE

WE have already told you something of the birds of the northern province and explained the division line between North and South. This does not mean that the birds of the two regions are entirely different. To be sure, some Northern birds do not go south at all, but others have a wide range and nest both North and South. Others which nest in the North spend the winter in the southern states, or else pass through on their way to Mexico or South America.

On the other hand, a great number of birds live all the year round in the region south of the line. Others which spend the winter farther south, when they come north in summer, do not extend their northward migration beyond central United States; and a good many of them are not to be found at any season north of the Carolinas on the coast, or Tennessee and Oklahoma in the West. Similarly, on the Pacific coast southern California and Arizona have birds never seen north of the hot, dry district. So you see that if you wish to know the birds of your section you may need to read all our chapters on the Birds of North America.

Most of the birds we shall describe in this article belong to families most abundant in the tropics. It would appear that such species are an adventurous overflow northward of these families. Most of them migrate to spend the winter in Mexico and Central America. To take their places there is an inflow of Northern birds, which are satisfied with the winter temperature and freedom from snow of the Gulf states. For this reason this region has more birds all the year round than any other part of the United States. This is owing to the fact that birds may find food there when northern states are under a pall of snow, ice and cold winds.

SOME STRIKING WATER BIRDS OF THE SOUTH

Beginning with the water birds, it may be said that most of the sea-fowl and the ducks pass on in spring to northern breeding-places, so that only the Laughing Gull, with the slate-colored head, and a few terns represent in the South the great Gull Family. The large, crested Caspian Tern, the smaller but similar Royal Tern and several other rarer ones make their nests among the shells of the sandy islands along the coast. All these sea-swallows are dressed in white and pearl-gray, with black caps. Two or three kinds of dark-colored terns are also present, one of which, the Noddy, reverses the usual coloring.

for the top of its head is silvery white and the rest of the plumage is dark brown. It differs from the others, all of which lay four heavily blotched eggs with little or no nest, by making a rude nest in bushes and low trees and laying whitish eggs. Great colonies of noddies inhabit the Tortugas Islands. A relative of these is the Black Skimmer, a tern-like bird with a very long straight beak, the lower part (mandible) of which is longer than the upper. The bird flies close to the water, with this long under-lip cutting the surface, and so scoops up any little fish it can catch.

Along the coast of the Gulf of Mexico are to be seen commonly such birds as darters, cormorants, ibises and man-o'-war birds, and great numbers of Brown Pelicans. These last are resident in Florida and along the Gulf coast, where, but for the agents of the National Association of Audubon Societies, they would perhaps by this time have been destroyed by tourists or by men who want their great wing feathers for millinery.

THE MOST BEAUTIFUL OF ALL AMERICAN DUCKS

Of the few ducks, the only one that needs mention is the Wood Duck—the most beautiful of all our ducks, and known in summer all over the United States wherever woods and waters lie together. The female is streaked brown, but the drake wears a splendid dress. His head is rich glistening green, the feathers prolonged backward into a pointed crest. A white line runs on each side from the red base of the bill over the eye to the tip of the crest, and other white lines diversify the checks. The back and tail are dark green; the breast chestnut; the flanks buff; and the under part of the body white; and these blocks of color are separated by lines and touches of white.

This lovely duck has another very interesting characteristic, for it makes its nest, not beside some marshy lake or stream, as do the mallard, the black duck and others, but in a hollow of a broken tree or dead stub. This may be sixty feet or more above the ground, and sometimes it is a mile or more from any water, so that one wonders how the ducklings are to be got down and given an opportunity to learn to swim. The drake leaves that to the mother, and she manages it in several ways. Sometimes the little ducklings, soon after they are born, are just pushed out of the doorway of their home, and float down without harm like balls of down; and sometimes they are carried down one by one on their mother's back; but usually she lifts them in her bill by a wing or leg and carries them to safety. If water is near by, they go into it at once, but frequently have to scramble a long way to reach it.

BIRDS KILLED FOR THEIR BEAUTIFUL FEATHERS

Many kinds of wading birds are residents of the South, where the extensive swamps and marshes along the Gulf coast and the lower reaches of the Mississippi afford them the food and nesting-places they like. They are mostly of the heron tribe. Five of them are particularly attractive. The Flamingo has a very long neck, long legs and an ugly beak, but its rosy red plumage makes up for its awkwardness. The Roseate Spoonbill gathers its food from the soft mud. Both are now very rare, though formerly common. The Egret, or White Heron, its lesser cousin the Snowy Egret, and the chestnut-colored Glossy Ibis are also rare.

The present scarcity of all five of these most beautiful of water birds is owing to their having been killed, ruthlessly and incessantly until recent years, for the sake of their exquisite plumage. That any remain is to the credit of the National Association of Audubon Societies. This organization not only has obtained protective laws from state legislatures, but has paid for guarding the birds while rearing their young. It is at this time that the coveted plumes are to be obtained from the parent birds, thus entailing the death of the forsaken young.

Some other herons are still fairly common. The Great Blue Heron stands three and a half feet high. The Louisiana Heron is slaty blue and is somewhat smaller. The Little Blue, the Little Green, and two night-herons, the Black-crowned and the Yellow-crowned, are also to be found in considerable numbers. All feed on fish, frogs, snakes, crayfish and similar creatures found in the marshes, and build rude nests of sticks in trees and bushes growing in or near water. Sometimes hundreds of these nests are crowded together in a great company called a rookery. Some of

WATER BIRDS OF THE SOUTH

The Wood Duck is the most beautiful of the family. It builds its nest high up in a hollow tree, sometimes quite a distance from the water.

The Noddy is a tern, with the top of its head silvery white and the remainder of its plumage dark brown. It nests in shrubs or low trees.

The story of the Egret is a shameful one. Formerly thousands were killed for their feathers, and the young left to starve. Through the influence of the Audubon Society they are now protected and guarded, and are increasing in numbers. This egret is sitting on its rough nest of twigs.

The Sandpipers are common in the North, but are seen in the South chiefly as they are migrating. They are attractive and cheerful.

The Brown Pelican shown here at its nest belongs to the West Indies and the South Atlantic states. It is hunted for the feathers of its wings.

these species, as the blue herons and the night-herons, are also found elsewhere in the United States.

Marshes, not only along the southern coast, but all over the interior as far north as the Great Lakes, are inhabited by various bitterns and marsh-hens, or mud-hens, known in the books as gallinules, rails and coots. These are plump, brownish or purplish birds, varying in size from that of a chicken to that of a partridge. They are good swimmers as well as runners, and feed on insects and small animals. Most of them are good eating, and one, the little Sora, is a favorite table-bird in the South. It is a rail. In such places, too, you will find the Bittern—a long-necked, long-billed, streaked bird that has the habit, when alarmed, of stiffening its body into an upright attitude, with its beak pointing straight up. Then its stripes blend with the light and dark lines of the reeds about it, and it can scarcely be seen. The bittern is the bird that makes the loud booming we hear in the marshes at dusk, and among its many names are Stake-driver and Dunk-a-doo.

Shore birds—sandpipers, stilts, oyster-catchers, plovers, curlews and their like—are noticeable in southern and central United States mainly during their spring migrations, when they alight on our shores after a night spent in crossing the sea from the West Indies or Venezuela, and for a few days haunt the beaches and wet lands, then pass on to summer residences in the Far North.

Some game birds which are still left

A few, however, remain with us and are well known to gunners. One of these is the Woodcock, which is nearly the size of the bobwhite and dwells in wet woods. It is mottled brown, with broad blackish bars across its head, neck and back, and flies with a startling *whirr* when you come near it. Like the snipes, it probes in soft earth and sand with a sensitive bill which feels the earthworms and buried grubs that it seeks; and it feeds mainly at night, resting by day in some shadowy recess, where its nest and white eggs are half hidden among fallen leaves.

The Snipe is much smaller and dwells in wet lowlands, where in the autumn it, as well as many other kinds of shore birds, are sought by gunners aided by trained dogs. On the higher, drier grounds are to be found the Bartramian Sandpiper, usually miscalled Upland Plover, and certain true plovers. The plovers are birds somewhat bigger than a robin, with rather long legs and with bills that resemble those of a pigeon. Most of them are black and white, with touches of brown, and with a dark ring about the neck. The most familiar are the Golden Plover, known all over the world. The noisy yelling of the Killdeer is to be heard in all open country, and its eggs are just as likely to be found on the ground in cultivated fields as in wild uplands.

This brings us to the family of game birds, including the bobwhite, or "quail," the ruffed grouse and the prairie chicken, descriptions of which will be found elsewhere (see Index). The only one of the group that is distinctly Southern is the turkey.

Where our domestic turkey came from

Our Wild Turkey, which, before white men and their guns came to this continent, was found in Ontario and all over the eastern United States, is the same as the Mexican turkey; and there is a second species in Yucatan. It was found by the Spanish conquerors of Mexico, early in the sixteenth century, domesticated among the Indians. Living specimens were sent back to Spain and soon became domesticated there and elsewhere in Europe. The people had a vague idea as to where this new fowl came from—some thought from Turkey, others from India. In France, therefore, it is still called *dinde*, but in England it was known as Turkey-bird. The British colonists in New England imported it under this name with their chickens and cows; and in this roundabout way our barnyard turkeys got back to their native soil, very little changed from their wild brethren, which are now rare except in thinly settled parts of the United States and Mexico.

Another bird that formerly was to be seen in the central part of the country in enormous numbers every summer was the Wild, or Passenger, Pigeon. It is now extinct. Its story is so well known that it need not be repeated here.

Another smaller pigeon, the Carolina, or Turtle, or Mourning Dove, as it is variously called, is still common all over

the country, and especially in the South, where in winter vast numbers gather to pass the cold months, and in some states are regarded as game birds. This dove is smaller than the domestic pigeon, and utters a plaintive, moaning note, constantly heard in the woods in early summer. It nests not only in low trees, but on rocks, stumps and logs, or even on the ground in the prairie regions, and lays two eggs on a very rude little platform of twigs.

Next come the birds of prey, few of which call for notice, because most of them are Northern birds and have been described in other chapters. Two vultures, the Turkey Buzzard and the Black Vulture, are peculiar to the South, although examples are to be seen now and then all over the country. Both are black throughout, and have the head and neck naked of feathers; but in the turkey buzzard the bare head is red, and in the black vulture this part is blackish. They feed almost altogether on carrion, and in far southern towns are protected as scavengers. They throng about the streets and buildings, and range over the farm fields. Both, although so disgusting when seen gorging themselves on offal or devouring some dead animal, are beautiful in flight. "On outstretched, immovable wings they soar overhead in graceful circles, perfect pictures of 'repose in motion.' Without once flapping their broad pinions, they sail in spirals up the sky until they are hidden by the storm-clouds they have purposely avoided."

Very often within a few minutes after an animal dies one or more of these birds comes circling down. There has been much dispute as to whether these birds are guided by scent or sight. Most students of the habits of birds now believe that their sight is so keen that they can discover food while high above the earth.

Some Hawks and Owls Which We Know

The long-winged, light-colored hawks called kites are common in the South, also, where they glide over the marshes in search of snakes, frogs and insects, on which they feed. The Swallow-tailed Kite is the one most often seen, and is perhaps the most graceful of all our birds of prey. The fish hawk and its tyrannical associate, the bald eagle, are common there, but the golden eagle is unknown, except toward Mexico. Many of the Northern hawks and falcons spend their winters on the southern coasts.

Much the same may be said of the owls. The little screech owl, the barn owl, the great-horned, and the barred owls belong to the southern as well as to the northern states, but most of the species breed only in the North. One, however, calls for a brief description—the queer little Burrowing Owl, which may be found from Florida to southern California, and all over the plains and mountain valleys from Nebraska to Utah and southward to Panama.

It is only ten inches long, and is buffy, dotted with white, so that it has the general color of the half-bare ground where it lives; and it stands very upright on rather long yellow legs, and does much running about, but little flying. It rarely, if ever, alights on trees, and lays its white eggs in a nest made in a burrow.

Often the burrows of these owls are dug by themselves; but they are glad to find one made by some other animal in which they may make a residence with little trouble in preparation. Therefore, these owls are always common in prairie-dog colonies, not only because they find there many empty holes and burrows suitable to their need, but because these "towns" furnish them with plentiful food. But the old story that they dwell comfortably in the same burrows with the prairie-dogs and rattlesnakes is nonsense. If the owl enters the hole of this or any other ground-squirrel, it is to hunt for, and seize, the young ones; and if it had a fair chance, it could doubtless kill any snake it met on the same errand. This owl is strong and courageous, despite its small size, and catches and eats all sorts of ground-squirrels, rats, mice, shrews and other small mammals, besides insects, snakes and an occasional bird. Those in the Northwest migrate to warmer regions on the approach of winter.

Some Birds of Woodland and Field

We have now come to the long list of birds of woodland and field, which please us by their elegant form and color; delight us by their singing; amuse us by pretty ways; and, best of all, serve us by aiding in our constant fight against

insects that devour our crops, injure our trees and threaten our health. These birds are nowhere more numerous and useful than in the central and southern parts of the United States; but the space allowed to this chapter will permit an account of only a few that are peculiarly Southern.

The almost tropical character of the Gulf coast is shown by the presence there, as annual stragglers, of several birds whose proper home, as a species, is in the West Indies or Mexico. Such are the mangrove cuckoo, the coal-black anis, "tick-birds," or "jew-birds," which build community nests, and the famous Roadrunner of Arizona and southern California. This is a queer kind of ground-dwelling cuckoo which can outrun a good horse, and catches for food swift lizards, agile snakes and jumping grasshoppers. It makes a big thorny nest in cactus plants, and feeds its young on lizards. The gorgeous green-and-red tropical trogons are represented by one sort, the Coppery-tailed Trogon, that crosses the Mexican border into Arizona. In body it is somewhat larger than a robin, but has a crested head and a tail longer than its body. Trogons have the habits of flycatchers, live mainly on insects, but also eat fruit, and make their nests in holes in trees in the mountain-woods. The Mexicans call them "Widows" on account of their peculiar crying notes.

The large woodpecker tribe has been pretty well described elsewhere, but some species are never seen in the northern states. Chief of these Southern woodpeckers is the Great Ivory-bill, now very scarce everywhere. It is known to exist only in a few swamps of Mississippi and southern Florida. A few may still remain in the northern part of Louisiana.

This magnificent woodpecker measures twenty inches in length, and has a chisel-shaped bill truly ivory-like in appearance, two and three-quarters inches long. It is black, with a white stripe running from the mouth down the side of the neck and over the shoulders, and the wing quills are white; and its head is crowned by a high sharp scarlet crest.

Other special Southern woodpeckers are the Red-cockaded, which has a red tuft on each side of the head; the Red-bellied, which is barred with alternate lines across the back and wings, and has a red cap and red beneath the tail; and the similar Gila Woodpecker of Arizona, with a gray head broken by a red patch on the crown.

Some Queer Birds of the Night

Those who live in the North are familiar with the whip-poor-will, the eastern night-hawk, or "bull bat," and with several similar species of the Nightjar Family on the Pacific slope; but one sort is restricted to the South. This is the noisy nightjar called, from its cry, "Chuck-will's-widow." It is, indeed, just a big whip-poor-will, browner and with more bristles about the great mouth, which opens to trap and swallow the largest moths as well as flying beetles and lesser insects. Like its relatives, it hides away by day on the ground in a shady dell, or at the edge of the woods, and attracts notice in its mottled brownish coat, which is very beautiful when looked at closely; and at dusk it begins its powerful flight in search of food to be caught on the wing, darting up and down, here and there, with astonishing agility. Now and then it captures and devours small birds. It is at such hours, and all through the night in the breeding season, that the loud calling of these birds, one to another, echoes through the air, often disturbing our sleep. The eggs of this species, like those of the other nightjars, are laid on the bare ground or among leaves in thickets or dense woods, with no nest whatever; there are only two, and they are very darkly blotched.

Passing over the swifts, we come in regular order to the humming-birds, where we need not linger, except to say that, besides the familiar ruby-throat of the whole eastern region, all other species are confined to the region of the plains, and mainly to the coast of California and northward. To the next family, the flycatchers, however, we must pay some attention.

The Scissor-tailed Flycatcher

The most beautiful North American bird of this family is Southern—the Scissor-tailed, or Swallow-tailed, Flycatcher of Texas and Oklahoma. It is a small bird, nearly white in general appearance, with two tail feathers as long as its body. These long outer tail plumes, which it can open and close at will, and its rose-pink flanks make the

bird as conspicuous as it is beautiful, as it restlessly moves about, with extremely graceful movements; or perhaps, as is its habit at twilight, it will rise high in the air, and then flutter down in zigzag flight, waving and twisting its beautiful plumes as it falls through the evening air. It spends most of its time in open places, where it can see, dash after, and seize the flying insects on which it subsists; but it builds a deep, downy nest in some woodland tree and lays cream-colored eggs prettily spotted.

The eastern and western kingbirds are widely distributed and well known, and two or three additional species of similar habits come a little way over the border from Mexico. One of them, the Gray Kingbird, is a summer resident in Florida or along the Gulf coast, where its sharp cry, *pitirri, pitirri,* rather than its appearance, distinguishes it from its Northern cousins.

The phœbe and other pewees are to be seen all over the country, though nesting mainly in the northern states and Canada; and the handsome, vigorous, loud-whistling, brown-and-yellow crested flycatcher, which likes to weave an old snake skin into its nest in some hole in a dead tree, is as well known in the South as elsewhere.

The Scissor-tailed Flycatcher.

The same may be said of the Blue Jay, so familiar in Dixieland as "Jaybird," and the hero of so many songs and legends among the colored folks there; but Florida has a different, more brownish, species of its own. In the Southwest, too, are several all-blue jays and one green species; but the noisy, blustering, swashbuckler manners of all are much alike. The crow lives and nests all over the South, but that region, all along the coast, has also the smaller Fish-crow, not known north of the lower Hudson valley, which subsists mainly on what it can pick up along the beaches and river-banks, and is a mischievous robber of birds' nests in the spring. The feathers have a metallic sheen, purplish above and greenish below.

Song Birds which are killed for food

This brings us to the large family of orioles and blackbirds, most of which have been elsewhere described (see Index).

The Meadow-lark is known in the South as "Old-field-lark," and in winter is so numerous there that it is shot as a game bird. The Bobolink is known there as "Rice-bird" when, especially during the autumn migration, and again in the spring, it attacks the rice crops in vast flocks; and in the fall it is shot and trapped for the market in great numbers as the "Reed-bird." Of the grackles, or "crow-blackbirds," the great Boat-tailed Grackle is peculiarly Southern, nesting in colonies wherever swamps attract it all along the coast and large river-courses from Carolina to Texas. Its plumage is beautifully metallic.

The great family of the Fringillidæ

Now we come to the extensive and widely distributed family *Fringillidæ*, which includes the sparrows, buntings, finches and grosbeaks. "They present," says Chapman, "wide diversity of form and habit, but generally agree in possessing stout, conical bills, which are admirably adapted to crush seeds. They are thus chief among seed-eaters, and for this reason are not so migratory as insect-eating species. It is only of late years that their great economic value as the destroyers of weed-seeds has been recognized." Of this long list of streaked, ground-keeping sparrows we need not speak, for all our space is needed for certain brightly plumaged grosbeaks and finches that are exclusively, or especially, Southern in their range.

The largest and most widely known of

these is the Redbird, or Cardinal Grosbeak, which remains in the South all the year round. It is among the largest of its race, as big as a robin, but stouter in build; and is dressed in cardinal red, set off by a bold crest and a black ring about the base of the strong coral-red beak. It comes familiarly about plantations, villages and city parks, cheering everybody by its joyous whistling, and lighting up the foliage with its gay color; and in the dull days of winter it seems gayer still by contrast with the dull landscape. No wonder that the redbird is a universal favorite, and that many stories gather about it. Occasionally it is found as far north as the Great Lakes or in New England. The Texas Cardinal is similar, except that the beak is yellow without the black ring.

THE BRILLIANT TANAGERS AND THEIR SOBER MATES

The cardinal is often confused with the tanagers by those who do not know the birds very well. The tanager represents another family of brilliant plumage very numerous in the tropics, of which we have two species, the Scarlet Tanager and the Summer Tanager. The former visits all Eastern North America in summer, and the male is dressed in scarlet, with jet-black wings and tail. The summer tanager is rose-red, with dusky wings, and is rarely seen north of Virginia and the Ohio River. Neither is crested like the cardinal. Both birds are fond of forests, and the latter is especially a denizen of pine woods. "High among the tree-tops of the cool green woods," writes Florence Merriam, "the tanager sings through the summer days. Hidden by the network of leaves above us, we often pass him by; but once discovered, he seems to illuminate the woods. We marvel at his color. He is like a bird of paradise in our northern landscape." The call of the scarlet tanager is a loud, distant *chip chur-r-r,* while the summer tanager says *chicky-tucky-tuck;* but both have excellent songs while their mates, which are safely dressed in greenish brown, brood their eggs on their nests in the trees.

BIRDS WHICH DRESS IN BLUE AND PURPLE

The overflow from the tropical *Fringillidæ* has given to the warm South several blue birds of exquisite plumage. One of these is the Blue Grosbeak, a large finch dressed in dark purplish blue and black, that is not very conspicuous either in appearance or song. Much better known, and more interesting, is the Indigo Bird, or Indigo Bunting, which is not only Southern, but is a delightful summer visitor to all the northern states as well. Its sparkling music is heard even in late summer, when most other birds have ceased to sing. The coat of this little singer is pure purplish blue, with changing tints as the light strikes it; but his wife, at rest in her snug nest in the bush beneath his perch, is dressed in soft browns and drabs, as is the case with almost all birds the males of which are brilliantly arrayed. Were the females and young as brilliant as their mates, it would be hard for them to hide either themselves or their nests.

Similar to the indigo bird in size, habits and song is the Lazuli Bunting of Texas and the Pacific coast; but only the head, throat and back are blue. The lower surface is pure white, separated from the light blue of the throat by a cinnamon band across the breast. Along the Mexican border we find in summer the Varied Bunting, whose coat is patterned in a mixture of red, purple, and blue hard to describe; it is uncommon. This introduces the Painted Bunting, or "Nonpareil," as it was admirably named by the French people of Louisiana long ago. The head is dark blue; the back and fore part of the wings are golden green; the wing quills, rump and tail dull red; and the throat and whole lower surface bright red. This is the male. The female is olive-green above and greenish white below. This elegant finch is more often heard than seen, for it is fond of dense thickets, where it slyly hides as if afraid its shining costume would betray it. It is to be found in summer from North Carolina to Texas, and northward to Arkansas; and formerly many were caught and sold as cage birds.

THE GREAT FAMILY OF WARBLERS

The warblers are a strictly American family of small, usually brightly colored, insect-eating birds. There are about a hundred species in all, many of which do not visit North America at all. However, a large number and variety of kinds of warblers visit us annually from the tropics, and retreat in the fall. A

large proportion of these pretty birds go to the Far North to make their nests, and few indeed are to be counted among really Southern birds. Such are the orange-yellow and green Prothonotary Warbler; the brown-and-yellow Swainson's Warbler, with the cinnamon-striped head; and the greenish, black-capped Bachman's Warbler—all of which pass their lives in the damp underbrush along the rivers, and make their nests on, or near, the ground. Others are the Parula Warbler, gray above, with a yellow patch on the back, and yellow below, with a black breast, which forms its nest in tufts of Spanish moss; the bluish gray Myrtle Warbler, easily recognized by its yellow rump and yellow crown, which spends the winter in great numbers in the southern states feeding on the waxen myrtle-berries; the bright blue-and-white Cærulean Warbler of the southern Alleghenies; the gray, black-checked, Yellow-throated Warbler; the bright yellow Prairie Warbler, which is fond of brushy hillsides and pasture lands; the yellow-and-black Kentucky Warbler and the familiar black-faced Yellow-throat, both of which love stream-banks and swamps, and nest on the ground.

The Tufted Titmouse.

Some authorities still class together the wrens proper, the catbird, mocking-bird and thrashers. Some of the wrens and the catbird and brown thrasher have been described in the chapters dealing with birds of the North, but several of the species are distinctly Southern in their habitat.

THE MOCKING-BIRD, THE AMERICAN NIGHTINGALE

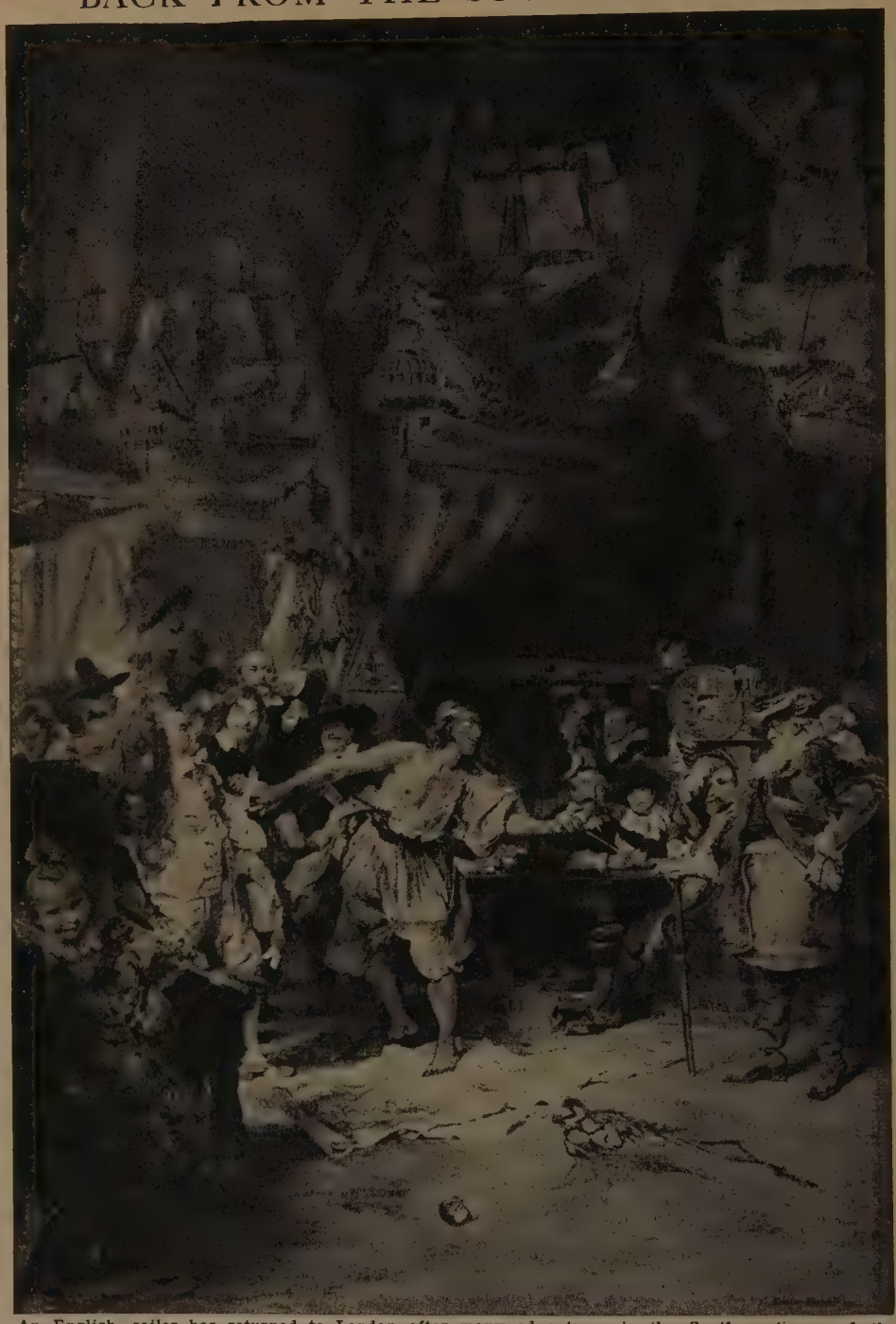
Foremost among these is the famous Mocking-bird, which is common in the southern states and west to California. It is our most famous American song bird. It is noticeably larger than the catbird, measuring ten and a half inches from the tip of its curved bill to the end of its long tail; and is ashy gray above; somewhat lighter on the under surface; has the wings and tail pale brown; the quills edged with white. It is not, therefore, a very handsome bird, nor especially interesting in manner, although elegant in form; and the affection in which it is held is a tribute to its voice. Its own song is exquisite. The Southern people regard it as the prince of American songsters, and compare it to the European nightingale. It is a wonderful ventriloquist, and can imitate any sound it hears made by bird or animal, and seems to take an impish delight in teasing. Formerly many were kept in cages, but they were very unhappy, and the bad practice seems to be dying out.

THE SAUCY WRENS AROUND OUR HOMES

Of the wrens two are far more common in the southern than in the northern states. One is the Carolina Wren, which is somewhat larger than the familiar house wren, and utters a startlingly loud song in which, sometimes, the bird seems to mimic others. Bewick's Wren is more like the house wren, but darker brown. Both are often seen in the Middle West. The chickadee is to be found all over the country, and the South has a cousin of his in the pretty Tufted Titmouse, often called "Peto" from its call. It is gray and white, with a handsome pointed crest. Another little gray bird of the Southern woods is the tiny blue-gray Gnatcatcher, which constructs a soft, lichen-embroidered cup of a nest balanced on a tree-limb, and hides within it five bluish thickly speckled eggs. It is a close relative of the kinglets which nest in the North.

These are only a few of the Southern birds. To tell even a little of all the birds that visit the South would require many volumes, because, as we have told you before, the section is a meeting-place of birds from the Far South and from the North. We have mentioned many of them in the general chapters on birds as well as in the other chapters on American birds. Consult the Index freely and you will probably find a mention of the bird you wish to learn about.

THE NEXT STORY OF ANIMAL LIFE IS ON PAGE 5133.



An English sailor has returned to London after many adventures in the Southern Seas and the Spanish Main, where he has been a captive of the Spaniards. He is relating his adventures to a company of English gentlemen engaged in foreign trade and adventure. Though not drawn to illustrate Westward Ho! the picture is clearly suggested by the story.

This picture is from the painting by Edgar Bundy, R. I., by permission of the artist.

THE STORIES OF CHARLES KINGSLEY

CHARLES KINGSLEY wrote Westward Ho! mainly, as he says himself, to commemorate those early days of England's naval and commercial glory, when, under the wise rule of Queen Elizabeth, England's enterprise was spreading and taking root in distant seas and distant lands. Spain was the most powerful of European nations at that period, and her ambition was to be mistress of the world, especially of England. But England's seamen, chiefly the men of Devon, put an end for all time to such designs when they routed the great Armada in 1588. Kingsley was himself a Devon man, so it was natural that he should make his hero a Devonian. His story of Devonshire worthies and their Spanish foemen is as lifelike as anything in the whole range of English historical fiction—hearty, free, strong and tender. It reveals in a peculiar way the English Protestant hatred of the Spaniards, but here the story is "the thing."

WESTWARD HO!

THE hero of our tale is a certain Devonshire youth named Amyas Leigh, a native of Bideford. In the days of our story Bideford was one of the chief ports of England. It furnished seven ships to fight the Armada. And more than a century afterward it "sent more vessels to the northern trade than any port in England, saving London and Topsham."

Amyas Leigh saw a lot of sailors and ships, and being fond of adventure, he longed to go to sea. He wanted especially to see the Indies and to fight the Spaniards. He said so to a group of weather-beaten mariners whom he came across one fine summer afternoon in the year 1575.

He was just fifteen then. But for some time past, on account of his extraordinary size and strength, he had been the undisputed cock of the school, and the most terrible fighter among the Bideford boys. His parents did not wish Amyas to go to sea at his age. Sir Richard Grenville agreed with them and advised the boy to wait a while. When Amyas fell from one scrape into another at school and ended by breaking a slate over the master's head, opinions changed.

AMYAS SETS OUT FOR THE SPANISH MAIN UNDER SIR FRANCIS DRAKE

It was quite clear to Sir Richard that nothing was to be done now but let Amyas have his way. So the lad presently found himself riding joyfully toward Plymouth and being handed over to the famous Captain Drake, whose name was already the terror of the Spanish Indies.

Three years passed, during which Amyas Leigh was not seen in his native Bideford. He had been round the world with Drake—literally round the world. So when Amyas and the other Devon men who had been with him returned in safety, Bideford held a public thanksgiving. A holiday was declared for the occasion, and the streets were turned into a very flower garden of all colors, swarming with seamen and burghers and burghers' wives and daughters, all in their holiday attire. That was how Amyas Leigh came home the first time.

HOME FROM HIS FIRST VOYAGE, AMYAS FALLS IN LOVE

Meanwhile he fell in love. The lady was Rose Salterne, the Mayor of Bideford's daughter, a beautiful girl of eighteen, about whom the half of North Devon had gone crazy. Amyas had a rival in his brother Frank, now at home, a tall, slim fellow of twenty-five; and he had a rival, too, in his cousin Eustace, a religiously inclined person who had been Catholic and Protestant in turn, but was finally settled in the older faith. Eustace proposed to Rose, who rejected him.

In truth, Amyas had more serious work on hand than love-making. He had to help, with Sir Richard Grenville, in the capture of some intriguing Jesuits. And then came an entrancing experience when, in Grenville's presence, he listened eagerly to "the true and tragical story of Mr. John Oxenham," as told by Salvation Yeo. Salvation Yeo makes a great figure in our tale. He was a tall, gaunt fellow, with a florid, black-bearded face. Amyas had encountered him long ago among the sailors on Bideford Quay.

Like Drake, Salvation Yeo was full of the conviction that, in fighting the Spaniards, he was fighting for the cause of freedom, of England and of God.

And what a story that was he told to Grenville and Amyas! It was all about Oxenham's adventure and his tragic end. For Yeo had gone as gunner on that same expedition in which our young hero had so wished to have a part. Yeo had helped to get the crew of seventy men together. In that exciting hunt for gold and treasure many of Oxenham's men were slain; some died of hunger and some of disease. Oxenham himself and sundry more were hanged. Salvation Yeo fell into the clutches of the Spanish Inquisition, to escape by and by and tell that wonderful yarn, which would make a good long story by itself.

AMYAS LEIGH CAPTURES AN IMPORTANT PRISONER, DON GUZMAN

It was now the year 1580 and the hated Spaniards were menacing Ireland. They landed, but could not hold their own against the men of Devon who were fighting for Ireland. Amyas Leigh was among those who withstood the Spaniards. At the end of a severe encounter Amyas brought in a captive.

Though Amyas did not know it, the prisoner was to play a very important part in his story. His name was Don Guzman. He was a very tall and graceful personage, golden-haired and fair-skinned, with hands as small and white as a woman's. The Don was Amyas's prize by right of war, but where to bestow him was the question.

AMYAS TIRES OF HIS LIFE IN IRELAND AND THIRSTS FOR NEW ADVENTURES

In the end Sir Richard Grenville, having been communicated with on the matter, agreed to receive the Don as his own guest at Bideford till his ransom should arrive.

Meanwhile Amyas, now a lieutenant, was left alone among the Irish bogs for two more years. Then, getting utterly sick of Ireland and the inactive life, he came home, determined on some adventure Westward Ho! As it happened, Sir Humphrey Gilbert, most pious and most learned of seamen and of cavaliers, beloved and honored above all his compeers by Queen Elizabeth, was just fitting out an expedition for Newfoundland and Labrador. Amyas went with him as a gentleman adventurer. Away they sailed to the West, the largest ship in the little squadron being only of 200 tons burden, the smallest of 10 tons. In such cockboats did these old heroes brave the unknown seas! And it was in that small 10-ton boat that Gilbert lost his life. The expedition was an utter failure, and Amyas Leigh, though he had a good share of adventure by it, came home with a sad heart.

WHAT AMYAS DISCOVERED WHEN HE CAME HOME, AND HIS NEW RESOLVE

But youth gets over most things, and Amyas got over this disappointment. There was another thing that he did not get over so quickly. He found that during his absence his old prisoner, the Señor Don Guzman, had been making love to Rose Salterne. The Spaniard had finally vanished with her, no one knew whither or in what character, whether as husband or lover.

These were the days of romantic chivalry, when gallants would go out and fight for distressed ladies, as Don Quixote did. Now, more than one of Rose's disappointed suitors vowed that he would find her and slay the rival who had carried her off. Amyas was chief among them. There were also his brother Frank, and Will Cary, and Jack Brimblecombe, the parson son of that Bideford schoolmaster whose skull had been so nearly fractured by Amyas. They were all bent on getting at Rose, and getting even with the Spaniard who had found favor in her eyes. Somebody brought the news that Don Guzman had been appointed Governor of La Guayra, on the Caribbean Sea, and had gone there with a lady for company. So, after consultation and long debate, it was decided that a ship should be fitted out and a crew got together, and away they would sail on the romantic expedition. Amyas, who was to be the leader, declared that,

if chance brought the Spaniards in his way, he would fight for his queen as well as for Rose Salterne.

AMYAS SETS SAIL IN THE ROSE ON A ROMANTIC EXPEDITION

Rose's father wanted to be revenged on the Spaniard, too, for the Spaniard had carried off his daughter without his consent. Salterne was a man of means, and it was he who was largely responsible for the cost of the expedition. The ship was appropriately called the Rose. She was of 200 tons burden, and she had a crew of a hundred picked men, for sailors packed close in those days. She carried beef, pork, biscuit and good ale in abundance, and was liberally provided with all the kinds of ammunition which were common at that time. In fact, when she dropped down from Bideford Quay on November 15, 1583, everybody allowed that so well-appointed a ship had never sailed "out over bar."

Probably no ship had a more adventurous career than had the Rose. She fought Spanish ships and conquered them. At many strange tropical ports she called, searching for Rose Salterne and Don Guzman. Finally at La Guayra Amyas heard that Rose and the Spaniard were in the governor's house. By a stratagem they saw Rose, who refused to leave Don Guzman. Eustace Leigh, who was with Rose, had the negroes make a treacherous attack on his own cousins. Amyas and Frank fought their way back to their boat. But when Amyas regained consciousness after being wounded he discovered Frank was not there. Evidently he had been captured.

It would take too long to tell of all the further adventures of the Rose and her men before Amyas returned home the third time. He and his men slowly and painfully worked their way northward again. They fraternized for a time with Indians whose chief food was ants and clay. Amyas nearly lost his heart to a half-wild mysterious Indian girl. But we shall give, in Kingsley's words, an account of the capture of a Spanish gold train.

HOW THEY TOOK THE GOLD-TRAIN

A FORTNIGHT or more has passed in severe toil; but not more severe than they have endured many a time before. Bidding farewell once and for ever to the green ocean of the eastern plains, they have crossed the Cordillera; they have taken a longing glance at the city of Santa Fé, lying in the midst of rich gardens on its lofty mountain plateau, and have seen, as was to be expected, that it was far too large a place for any attempt of theirs. But they have not altogether thrown away their time. Their Indian lad has discovered that a gold-train is going down from Santa Fé toward the Magdalena; and they are waiting for it beside the miserable rut which serves for a road, encamped in a forest of oaks which would make them almost fancy themselves back again in Europe, were it not for the tree-ferns which form the under-growth; and were it not, too, for the deep gorges opening at their very feet; in which, while their brows are swept by the cool breezes of a temperate zone, they can see far below, dim through their everlasting vapour-bath of rank hot steam, the mighty forms and gorgeous colours of the tropic forest.

They have pitched their camp among the tree-ferns, above a spot where the path winds along a steep hill-side, with a sheer cliff below of many a hundred feet. There was a road there once, perhaps, when Cundinamarca was a civilised and cultivated kingdom; but all which Spanish misrule has left of it are a few steps slipping from their places at the bottom of a narrow ditch of mud. It has gone the way of the aqueducts, and bridges, and post-houses, the gardens and the llama-flocks of that strange empire. In the mad search for gold, every art of civilisation has fallen to decay, save architecture alone; and that survives only in the splendid cathedrals which have risen upon the ruins of the temples of the Sun, in honour of a milder Pantheon; if, indeed, that can be called a milder one which demands (as we have seen already) human sacrifices, unknown to the gentle nature-worship of the Incas.

And now, the rapid tropic vegetation has reclaimed its old domains, and Amyas and his crew are as utterly alone, within a few miles of an important Spanish settlement, as they would be in the solitudes of the Orinoco or the Amazon.

In the meanwhile, all their attempts to find sulphur and nitre have been unavail-

ing; and they have been forced to depend after all (much to Yeo's disgust) upon their swords and arrows. Be it so: Drake took Nombre de Dios and the gold-train there with no better weapons; and they may do as much.

So, having blocked up the road above by felling a large tree across it, they sit there among the flowers chewing coca, in default of food and drink, and meditating among themselves the cause of a mysterious roar, which has been heard nightly in their wake ever since they left the banks of the Meta. Jaguar it is not, nor monkey: it is unlike any sound they know; and why should it follow them? However, they are in the land of wonders; and, moreover, the gold-train is far more important than any noise.

At last, up from beneath there was a sharp crack and a loud cry. The crack was neither the snapping of a branch, nor the tapping of a woodpecker; the cry was neither the scream of the parrot, nor the howl of the monkey,—

"That was a whip's crack," said Yeo, "and a woman's wail. They are close here, lads!"

"A woman's? Do they drive women in their gangs?" asked Amyas.

"Why not, the brutes? There they are, sir. Did you see their basnets glitter?"

"Men!" said Amyas in a low voice, "I trust you all not to shoot till I do. Then give them one arrow, out swords, and at them! Pass the word along."

Up they came, slowly, and all hearts beat loud at their coming.

First, about twenty soldiers, only one-half of whom were on foot; the other half being borne, incredible as it may seem, each in a chair on the back of a single Indian, while those who marched had consigned their heaviest armour and their arquebuses into the hands of attendant slaves, who were each pricked on at will by the pikes of the soldiers.

"The men are mad to let their ordnance out of their hands."

"Oh, sir, an Indian will pray to an arquebus not to shoot him; be sure their artillery is safe enough," said Yeo.

"Look at the proud villains," whispered another, "to make dumb beasts of human creatures like that!"

"Ten shot," counted the business-like Amyas, "and ten pikes; Will can tackle them up above."

Last of this troop came some inferior officer, also in his chair, who, as he went slowly up the hill, with his face turned toward the gang which followed, drew every other second the cigar from his lips, to inspirit them with those pious ejaculations to the various objects of his worship, divine, human, anatomic, wooden and textile, which earned for the pious Spaniards of the sixteenth century the uncharitable imputation of being at once the most fetich-ridden idolaters, and the most abominable swearers of all Europeans.

"The blasphemous dog!" said Yeo, fumbling at his bowstring, as if he longed to send an arrow through him. But Amyas had hardly laid his finger on the impatient veteran's arm, when another procession followed, which made them forget all else.

A sad and hideous sight it was: yet one too common even then in those remoter districts, where the humane edicts were disregarded, which the prayers of Dominican friars (to their everlasting honour be it spoken) had wrung from the Spanish sovereigns; and which the legislation of that most wise, virtuous, and heroic Inquisitor (paradoxical as the words may seem), Pedro de la Gasca, had carried into effect in Peru,—futile and tardy alleviations of cruelties and miseries unexampled in the history of Christendom, or perhaps on earth, save in the conquests of Sennacherib and Zinghis-Khan. But on the frontiers, where negroes were imported to endure the toil which was found fatal to the Indian, and all Indian tribes convicted (or suspected) of cannibalism were hunted down for the salvation of their souls and the enslavement of their bodies, such scenes as these were still too common; and, indeed, if we are to judge from Humboldt's impartial account, were not very much amended even at the close of the last century, in those much-boasted Jesuit missions in which (as many of them as existed anywhere but on paper) military tyranny was superadded to monastic, and the Gospel preached with fire and sword, almost as shamelessly as by the first Conquistadores.

A line of Indians, Negroes, and Zambos, naked, emaciated, scarred with whips and fetters, and chained together by their left wrists, toiled upwards, panting and perspiring under the burden of a basket held up by a strap which passed across

their foreheads. Yeo's sneer was but too just; there were not only old men and youths among them, but women; slender young girls, mothers with children running at their knee; and, at the sight, a low murmur of indignation rose from the ambushed Englishmen, worthy of the free and righteous hearts of those days, when Raleigh could appeal to man and God, on the ground of a common humanity, in behalf of the outraged heathens of the New World; when Englishmen still knew that man was man, and that the instinct of freedom was the righteous voice of God; ere the hapless seventeenth century had brutalised them also, by bestowing on them, amid a hundred other bad legacies, the fatal gift of negro-slaves.

But the first forty, so Amyas counted, bore on their backs a burden which made all, perhaps, but him and Yeo, forget even the wretches who bore it. Each basket contained a square package of carefully corded hide; the look whereof friend Amyas knew full well.

"What's in they, captain!"

"Gold!" And at that magic word all eyes were strained greedily forward, and such a rustle followed, that Amyas, in the very face of detection, had to whisper—

"Be men, be men, or you will spoil all yet!"

The last twenty, or so, of the Indians bore larger baskets, but more lightly freighted, seemingly with maniôc, and maize-bread, and other food for the party; and after them came, with their bearers and attendants, just twenty soldiers more, followed by the officer in charge, who smiled away in his chair, and twirled two huge mustachios, thinking of nothing less than of the English arrows which were itching to be away and through his ribs. The ambush was complete; the only question how and when to begin?

Amyas had a shrinking, which all will understand, from drawing bow in cool blood on men so utterly unsuspicious and defenceless, even though in the very act of devilish cruelty—for devilish cruelty it was, as three or four drivers armed with whips, lingered up and down the slowly-staggering file of Indians, and avenged every moment's lagging, even every stumble, by a blow of the cruel manati-hide, which cracked like a pistol-shot against the naked limbs.

Suddenly the casus belli, as usually happens, arose of its own accord.

The last but one of the chained line was an old grey-headed man, followed by a slender graceful girl of some eighteen years old, and Amyas's heart yearned over them as they came up. Just as they passed, the foremost of the file had rounded the corner above; there was a bustle, and a voice shouted, "Halt, Señors! there is a tree across the path!"

"A tree across the path?" bellowed the officer, with a variety of passionate addresses to the Mother of Heaven, the fiends of hell, Saint Jago of Compostella, and various other personages; while the line of trembling Indians, told to halt above, and driven on by blows below, surged up and down upon the ruinous steps of the Indian road, until the poor old man fell grovelling on his face.

The officer leaped down, and hurried upward to see what had happened. Of course, he came across the old man.

"Sin peccado concebida! Grandfather of Beelzebub, is this a place to lie worshipping your fiends?" and he pricked the prostrate wretch with the point of his sword.

The old man tried to rise: but the weight on his head was too much for him; he fell again, and lay motionless.

The driver applied the manati-hide across his loins, once, twice, with fearful force; but even that specific was useless.

"Gastado, Señor Capitan," said he, with a shrug. "Used up. He has been failing these three months!"

"What does the intendant mean by sending me out with worn-out cattle like these? Forward there!" shouted he. "Clear away the tree, Señors, and I'll soon clear the chain. Hold it up, Pedrillo!"

The driver held up the chain, which was fastened to the old man's wrist. The officer stepped back, and flourished round his head a Toledo blade, whose beauty made Amyas break the Tenth Commandment on the spot.

The man was a tall, handsome, broad-shouldered, high-bred man; and Amyas thought that he was going to display the strength of his arm, and the temper of his blade, in severing the chain at one stroke.

Even he was not prepared for the recondite fancies of a Spanish adventurer, worthy son or nephew of those first conquerors, who used to try the keenness of

their swords upon the living bodies of Indians, and regale themselves at meals with the odour of roasting caciques.

The blade gleamed in the air, once, twice, and fell: not on the chain, but on the wrist which it fettered. There was a shriek—a crimson flash—and the chain and its prisoner were parted indeed.

One moment more, and Amyas's arrow would have been through the throat of the murderer, who paused, regarding his workmanship with a satisfied smile; but vengeance was not to come from him.

Quick and fierce as a tiger-cat the girl sprang on the ruffian, and with the intense strength of passion, clasped him in her arms, and leaped with him from the narrow ledge into the abyss below.

There was a rush, a shout; all faces were bent over the precipice. The girl hung by her chained wrist: the officer was gone. There was a moment's awful silence; and then Amyas heard his body crashing through the tree-tops far below.

"Haul her up! Hew her in pieces! Burn the witch!" and the driver, seizing the chain, pulled at it with all his might, while all springing from their chairs, stooped over the brink.

Now was the time for Amyas! Heaven had delivered them into his hands. Swift and sure, at ten yards off, his arrow rushed through the body of the driver, and then, with a roar as of the leaping lion, he sprang like an avenging angel into the midst of the astonished ruffians.

His first thought was for the girl. In a moment, by sheer strength, he had jerked her safely up into the road; while the Spaniards recoiled right and left, fancying him for the moment some mountain giant or supernatural foe. His hurrah undeceived them in an instant, and a cry of "English! Lutheran dogs!" arose, but arose too late. The men of Devon had followed their captain's lead: a storm of arrows left five Spaniards dead, and a dozen more wounded, and down leapt Salvation Yeo, his white hair streaming behind him, with twenty good swords more, and the work of death began.

The Spaniards fought like lions; but they had no time to fix their arquebuses on the crutches; no room, in that narrow path, to use their pikes. The English had the wall of them; and to have the wall there, was to have the foe's life at their mercy. Five desperate minutes, and not a living Spaniard stood upon those steps; and certainly no living one lay in the green abyss below. Two only, who were behind the rest, happening to be in full armour, escaped without mortal wound, and fled down the hill again.

"After them! Michael Evans and Simon Heard; and catch them, if they run a league."

The two long and lean Clovelly men, active as deer from forest training, ran two feet for the Spaniards' one; and in ten minutes returned, having done their work; while Amyas and his men hurried past the Indians, to help Cary and the party forward, where shouts and musket shots announced a sharp affray.

Their arrival settled the matter. All the Spaniards fell but three or four, who scrambled down the crannies of the cliff.

"Let not one of them escape! Slay them as Israel slew Amalek!" cried Yeo, as he bent over; and ere the wretches could reach a place of shelter, an arrow was quivering in each body, as it rolled lifeless down the rocks.

"Now then! Loose the Indians!"

They found armourers' tools on one of the dead bodies, and it was done.

"We are your friends," said Amyas. "All we ask is, that you shall help us to carry this gold down to the Magdalena, and then you are free."

Some few of the younger grovelled at his knees, and kissed his feet, hailing him as the child of the Sun: but the most part kept a stolid indifference, and when freed from their fetters, sat quietly down where they stood, staring into vacancy. The iron had entered too deeply into their soul. They seemed past hope, enjoyment, even understanding.

But the young girl, who was last of all in the line, as soon as she was loosed, sprang to her father's body, speaking no word, lifted it in her thin arms, laid it across her knees, kissed the fallen lips, stroked the furrowed cheeks, murmured inarticulate sounds like the cooing of a woodland dove, of which none knew the meaning but she, and he who heard not, for his soul had long since fled. Suddenly the truth flashed on her; silent as ever, she drew one long heaving breath, and rose erect, the body in her arms.

Another moment, and she had leaped into the abyss.

They watched her dark and slender limbs, twined closely round the old man's corpse, turn over, and over, and over, till

a crash among the leaves, and a scream among the birds, told that she had reached the trees; and the green roof hid her from their view.

"Brave lass!" shouted a sailor.

"The Lord forgive her!" said Yeo. "But, your worship, we must have these rascals' ordnance."

"And their clothes too, Yeo, if we wish to get down the Magdalena unchallenged. Now listen, my masters all! We have won, by God's good grace, gold enough to serve us the rest of our lives, and that without losing a single man; and may yet win more, if we be wise, and He thinks good. But oh, my friends, remember Mr. Oxenham and his crew; and do not make God's gift our ruin, by faithlessness, or greediness, or any mutinous haste."

"You shall find none in us!" cried several men. "We know your worship. We can trust our general."

"Thank God!" said Amyas. "Now then, it will be no shame or sin to make the Indians carry it, saving the women, whom God forbid we should burden. But we must pass through the very heart of the Spanish settlements, and by the town of Saint Martha itself. So the clothes and weapons of these Spaniards we must have, let it cost us what labour it may. How many lie in the road?"

"Thirteen here, and about ten up above," said Cary.

"Then there are near twenty missing. Who will volunteer to go down over cliff, and bring up the spoil of them?"

"I, and I, and I;" and a dozen stepped out, as they did always when Amyas wanted anything done; for the simple reason, that they knew that he meant to help at the doing of it himself.

"Very well, then, follow me. Sir John, take the Indian lad for your interpreter, and try and comfort the souls of these poor heathens. Tell them that they shall all be free."

"Why, who is that comes up the road?"

All eyes were turned in the direction of which he spoke. And wonder of wonders! up came none other than Ayacanora herself, blow-gun in hand, bow on back, and bedecked in all her feather garments, which last were rather the worse for a fortnight's woodland travel.

All stood mute with astonishment, as seeing Amyas, she uttered a cry of joy, quickened her pace into a run, and at last fell panting and exhausted at his feet.

"I have found you!" she said; "you ran away from me, but you could not escape me!" And she fawned round Amyas, like a dog who has found his master, and then sat down on the bank, and burst into wild sobs.

"God help us!" said Amyas, clutching his hair, as he looked down upon the beautiful weeper. "What am I to do with her, over and above all these poor heathens?"

But there was no time to be lost, and over the cliff he scrambled; while the girl, seeing that the main body of the English remained, sat down on a point of rock to watch him.

After half-an-hour's hard work, the weapons, clothes, and armour of the fallen Spaniards were hauled up the cliff, and distributed in bundles among the men; the rest of the corpses were thrown over the precipice, and they started again upon their road toward the Magdalena, while Yeo snorted like a war-horse who smells the battle, at the delight of once more handling power and ball.

"We can face the world now, sir! Why not go back and try Santa Fé, after all?"

But Amyas thought that enough was as good as a feast, and they held on downwards, while the slaves followed, without a sign of gratitude, but meekly obedient to their new masters, and testifying now and then by a sign or a grunt, their surprise at not being beaten, or made to carry their captors. Some, however, caught sight of the little calabashes of coca which the English carried. That woke them from their torpor, and they began coaxing abjectly (and not in vain) for a taste of that miraculous herb, which would not only make food unnecessary, and enable their panting lungs to endure that keen mountain air; but would rid them, for awhile at least, of the fallen Indian's most unpitying foe, the malady of thought.

As the cavalcade turned the corner of the mountain, they paused for one last look at the scene of that fearful triumph. Lines of vultures were already streaming out of infinite space, as if created suddenly for the occasion. A few hours and there would be no trace of that fierce fray, but a few white bones amid untrodden beds of flowers.

. . . . . .

But we must close Kingsley's own words; and tell the rest of the story briefly.

Later on they took a great Spanish galleon full of rich treasure. And at length, in the spring of 1587, they all found themselves once more among old scenes and old faces in the homeland, with "treasure untold," as Amyas said to his mother. They went out a hundred, and they came back forty-four. Where were the rest?

Their bones are scattered far and wide
By mount, and stream, and sea.

THE TRAGIC FATE OF ROSE SALTERNE AND FRANK LEIGH

And what of Rose Salterne, she for whom this great adventure had been undertaken? Burned, alas! at the stake as a heretic; for she declined to give up her Protestant faith.

The very morning after that terrible night's encounter at La Guayra, Rose was seized and taken down to the quay and shipped off to Cartagena. She was asked to recant and become a Catholic, but she remained firm. Three weeks afterward she was brought out to her fate.

When Amyas Leigh heard all the dreadful story, he vowed another oath, and it was this: that he would kill Spaniards, in fair fight, by land and sea, wherever he met them. The day was close at hand when Amyas could fight the Spaniards at home. For this was the year of the great Armada—that same 1588 which decided, once and for all, the fortunes of the European nations and of the continent of America.

AMYAS IS CHEERED AT THE PROSPECT OF ENGAGING DON GUZMAN AFTER ALL

We all know the story of the twelve days' fight which closed with the complete rout of that vast armament which Philip II sent to subdue England. All that concerns us about it here is the part played by our hero. Above and beyond his delight at fighting the Spaniards, he had the hope of encountering Don Guzman, his old rival. But it took him some time to find the St. Catherine, Don Guzman's ship, among all that array of craft. Day after day, in the protracted tussle, he sought for his prey. At last his quest was successful.

"Don Guzman!" he shouted, as he brought his own ship up against the Spaniard. "At your service, sir, whosoever you may be," was the reply. A dozen muskets and arrows were leveled at the Don, but Amyas frowned them down. "No man strikes him but I. Spare *him*, if you kill every other soul on board. Don Guzman! I am Captain Amyas Leigh; I challenge you to single combat." "You are welcome to come on board me, sir," answered the Spaniard, "bringing with you this answer, that you lie in your throat." "Coward!" shouted Amyas.

HOW THE SPANIARD MET HIS FATE, BUT ELUDED AMYAS AT THE LAST

Don Guzman started, then clutched his sword-hilt and tossed back: "For that word you hang at my yard-arm if St. Mary gives me grace." Then the fire began from both sides. Amyas poured in his shot till the Spaniard's sides were slit and spotted in a hundred places. But the Spaniard seemed invulnerable. And when night came, she was still in a condition fit enough to rejoin her fellows.

The Spaniards had gradually been losing ground, and in another day or two the "invincible" Armada, pommeled and riddled by the English, was seen in ignominious flight northward. Some part of the English fleet started after them, but had to give up for want of powder and shot. Amyas Leigh alone held on. He must have his revenge. Sixteen days passed, and still the chase went on. Then, just as Amyas was about to close with his enemy, a great storm arose. The mighty St. Catherine, with 500 souls on board, plunged her yards into the foam and vanished forever, taking with her the man who had stolen the Rose of Bideford.

"Shame!" cried Amyas, hurling his sword far into the sea. "Shame! to lose my right, my right, when it was in my very grasp! Unmerciful!"

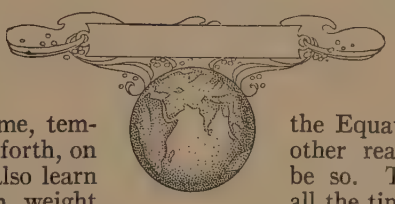
But in that moment came a flash of lightning and a bolt struck Amyas and Salvation Yeo. Yeo was killed instantly, and Amyas lost the sight of his eyes. With her captain blind, the Vengeance sailed for home. In Bideford Mrs. Leigh was waiting for her son. She welcomed him as a brave mother welcomes a gallant son. And she lightened his burden of blindness by blessing his marriage with Ayacanora, who had made her way to the Leigh home.

And that was the end of all Amyas Leigh's exciting adventures.

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5149.

When a piece of iron is placed in a glass of water it displaces its own bulk of water, and the liquid rises from 1 to 2, as in the second glass. If the displaced water and the iron are weighed, it will be found that the iron is about 7¾ times as heavy as the water, and so its specific gravity is 7¾.

THE SIZE AND WEIGHT OF THINGS



WE have read about the way in which things are measured—about the measurement of time, temperature, mass, and so forth, on page 4901. We may also learn to distinguish between weight and mass, and we may learn something about the balance of forces. We must now learn a little more about gravity, and then about another very interesting thing which is called Specific Gravity.

In the case of gravitation, we can allow things to drop and measure their rate of falling, as we read on page 4903. It is very difficult, however, to get accurate results by this method. Far more precise results can be obtained by the use of a pendulum, for the rate at which a given pendulum swings depends upon gravity; and when we try this method we find that one and the same pendulum will swing at different rates in different parts of the world.

This can only mean that the force of gravity is not the same in different parts of the world. We know that the earth is flattened at the North Pole and the South Pole. This means that anything at the Equator is farther away—several miles farther away—from the centre of the earth than it would be if it were taken to either the North or the South Pole. As the force of gravity varies with distance, a thing must therefore be heavier at the Poles than at the Equator. But there is another reason why this should be so. The earth is spinning all the time. If we could stand upon either Pole of the earth, we should, of course, spin round once in twenty-four hours. If anything were placed six inches from the Pole it would, of course, describe a little circle around it in twenty-four hours. This movement would be very slow indeed. But very different is the case of that same thing if we take it to the Equator.

At the Equator the circumference of the earth is about 25,000 miles, and just as the thing near the Pole has to travel a few inches in twenty-four hours, so at the Equator it has to travel 25,000 miles in twenty-four hours—more than a thousand miles an hour. Now, we know that anything moving in this way on the surface of the earth tends to fly out at a tangent to the circle in which it moves, and this is called *centrifugal force*.

This, of course, applies to anything on a spinning body, like the earth. The quicker the thing moves, the greater is its tendency to fly out. In other words, the so-called centrifugal force becomes greater and greater the

nearer anything approaches to the Equator, for the nearer it is to the Equator, the more quickly it is bound to move. This force acts against the earth's gravitation. Indeed, it is the earth's gravitation that prevents things from flying out and keeps them traveling in a circular path on the earth's surface, though the motion in them wants to make them fly out.

Therefore, as the force acting against the earth's gravity increases as we approach the Equator, the force of gravity, when we weigh it, seems to be less the nearer we go to the Equator. It actually is less, because we are farther from the centre of the earth.

THE DIFFERENCE IN THE MOVEMENT OF A FALLING BODY

We know that gravity has the power of increasing by 32 feet in every second the rate at which anything falls to the earth. It is this rate by which we measure gravity, and now we can say more exactly what the figures are, and we can also learn the proper way in which to state them. We can take, for example, the first letter of the word gravitation and let the letter *g* stand for. the intensity of gravity, in any part of the world. In our part of the world the value of *g*, we say, is around 32.2 feet per second; that is to say, that for every second that anything falls its rate of falling is increased by about 32.2 feet each second; in other words, gravity produces with us, during every second of its action, an acceleration —that is, a quickening—of 32.2 feet each second.

Now, the value of *g* at the Poles is about 32.25. We know that .25 is a quarter, so that for every second during which a body falls at the Poles gravity increases its speed by about 32 feet 3 inches; whereas with us the 3 inches would be nearer 2 inches. The value of *g* at the Equator is decidedly less than 32.1, so that the acceleration will be very little more than 32 feet 1 inch every second.

THE MEANING OF SPECIFIC GRAVITY AND WHY IT IS IMPORTANT

We must now go on to study something else which depends upon gravity and which is called *specific gravity*. The word "specific," which is very much used in all the sciences, is really only another form of a word which we all know very well, and that is the word "special." We talk of the specific gravity of a thing, or of its specific heat, or the specific characters of a particular kind of animal or plant, and in all these cases the word practically means "special."

When we talk of the specific gravity of anything we are simply using a short expression for the amount of stuff in it in proportion to the space it occupies. A pound of lead takes up a great deal less room than a pound of wood; the lead has more stuff, or matter, in a given space. If we remember the word mass, we may say that the lead is "more massive."

This question is very important because of the great results which follow from the differences in the specific gravities of things. One thing floats and another sinks. When we run hot water into a bath of cold water, the hot water tends to float on the top of the cold; if we run cold water in after hot water, it runs toward the bottom of the hot water; the warm breath from our lungs rises in the cooler air into which it is breathed; a balloon filled with hot air or hydrogen will float, or rise, and so on. All of these facts, and thousands more, depend upon the important question of specific gravity.

WHY WE USE WATER AS A STANDARD FOR MEASURING WEIGHTS

We are now faced again with the question of measurement. We want to be able, in some short and simple way, to say how heavy gold is, compared with water. That is the way we put it in ordinary speech. We say that one thing is heavier than another; we do not mean that a pound of gold is heavier than a pound of water, but that we can get a greater weight of gold than we can of water into a given space. Gold has a greater specific gravity. Water is such a common substance, and so important, that we may take it as our standard.

Ordinary water contains various things dissolved in it, especially gases, and these make a difference. So when we speak of water in this connection we mean distilled water, but this is not all. We know that, as a rule, when things are heated they expand, and when they are cooled they shrink. The amount of stuff in a given space changes; in other words, the specific gravity changes. So it will not do to say distilled water. We must know at what temperature we are considering it. When we study water we find that it is densest—most shrunken, or heaviest—when it is 4 degrees Centigrade above its freezing-

point. On the sensible Centigrade scale the freezing-point of water is zero, so that 4° Centigrade indicates the temperature at which water is densest. Now, we can take this as our standard. The specific gravity of pure distilled water at 4° Centigrade we call 1; then, if we find anything that has twice this specific gravity, we shall call that 2, and so on.

How we may find out the space occupied by anything solid

Now, suppose that we want to find the specific gravity of some odd-shaped thing. We can weigh it, but we want to know more than what it weighs; we cannot tell its specific gravity until we know how much space it occupies, and if it is an odd-shaped thing, this may not be at all easy to find out. With a thing of irregular shape we can easily find out how much space it occupies by putting it into water and noticing how much the water rises.

It is often very important to study the specific gravity of liquids. For instance, milk ought to contain in itself a certain amount of solid matter. It is for this solid matter that we buy the milk, as it gives it its food value. If water is added to the milk, we are being cheated. There must be some way in which we can tell whether the amount of solid matter dissolved in the milk comes up to the standard, and we can do this by measuring the specific gravity of the milk.

A little instrument that tells the specific gravity of any liquid

There is a simple little instrument called the hydrometer, which means "water-measurer," by which anyone can find out in a moment the specific gravity of a liquid. It is simply a glass tube with a weight at the lower end, and with a scale marked on it like that on a thermometer.

The heavier the fluid in which we place the hydrometer, the less is the depth to which it will sink before it floats. On the tube is a mark which shows the level at which the hydrometer will float in water. If the liquid is lighter than water, as, for instance, alcohol, the hydrometer will sink deeper than this mark; if it is heavier than water, like milk, the hydrometer will not sink so far. We shall see in a little while some of the results obtained with this simple little instrument.

Another kind of instrument for measuring specific gravity is called a specific-gravity bottle, and it is very simple and easy to understand. It can be used sometimes for measuring the specific gravity of liquids, and sometimes for solids. The bottle has to be very carefully made, so that it will hold exactly a thousand grains of water at the temperature we have agreed upon. The stopper of the bottle has a hole through which the contents can escape when the stopper is driven home.

A bottle of water, and what it can teach us

Supposing we want to measure the specific gravity of some small shot: we can take a given weight of the shot and put it into such a bottle already filled with water. The volume of water that escapes from the bottle in order to make room for the shot is exactly the same as the volume of the shot inserted. All we have to do is to weigh the water that escapes and compare it with the weight of the shot. Suppose the shot weighs eleven times as much as the water of the same volume, then the specific gravity of the shot would be 11. This would be just about the figure if the shot were made of lead.

Or, again, we could fill such a bottle as this with ether, and then weigh the amount of ether that we could get into it. We should find the bottle that held a thousand grains of water would hold only about 715 grains of ether, so that the specific gravity of ether is .715, if we call the specific gravity of water 1. It is often very convenient to use 1,000 for the specific gravity of water instead of 1, and then we can say that the specific gravity of ether is 715, that the specific gravity of milk is about 1,030—it should not be less—and that the specific gravity of healthy blood is 1,055, and so on.

Different things compared as to their bulk and weight

Here is a table which shows us the specific gravities of some important substances as compared with the specific gravity of water counted as 1. We shall readily understand that those things which possess a specific gravity higher than 1 will sink in water; while those, such as ice, for instance, which have a specific gravity less than 1 will float upon water; but the nearer the specific gravity is to that of the water, the greater is the amount of the thing which must be immersed in water before it can float. Here is the list:

Solids			
Platinum (rolled)	22.1	Diamonds	3.5
Gold	19.3	Marble	2.8
Lead	11.4	Aluminium	2.7
Silver	10.5	Ice	0.9
Iron (wrought)	7.8	Potassium	0.9
" (cast)	7.2	Lithium	0.6
Tin	7.3	Cork	0.2
Liquids			
Mercury	13.59	Sea-water	1.03
Sulphuric acid	1.84	Petroleum	0.84
Blood	1.05	Alcohol	0.79
Milk	1.03	Ether	0.71

Gases, of course, have their own specific gravity, just as solids and liquids have. In this case we usually take the gas hydrogen, which is the lightest of all, and we state the specific gravity of other gases by comparison with it. Sometimes air of a certain temperature is taken, but it is better to take hydrogen. If we call the specific gravity of hydrogen 1, that of oxygen is 16, and that of the mixture of gases we call air is about 14.4. In other words, hydrogen is only about one-fourteenth as heavy as air.

WHY A BALLOON GOES UP, BUT WILL NOT GO UP FOREVER

We can now understand why a balloon filled with hydrogen will rise in the air; we can also understand that there will be a point beyond which it cannot rise, because the air becomes less dense as we pass upward in it. In other words, the specific gravity of the air is lowered, and there comes a point when it can no longer do more than just sustain the balloon, even though the balloon is filled with hydrogen.

This is all we need to say here about the specific gravity of gases, but we must note a few of the facts which are suggested in the table of solids and liquids. We notice the great weight of various metals, and also that one of them, though liquid, ranks high in specific gravity, even when compared with solids. This liquid metal is mercury. There is no other liquid which at all approaches it in specific gravity.

Not all the metals are very heavy. Potassium and lithium, for instance—metals we seldom see in their pure state outside a laboratory—have a specific gravity of less than 1, which means that they will float upon water. Just above them in the table we notice ice, and remind ourselves that water, when it is cooled to the freezing-point from 4° Centigrade, expands, and therefore its specific gravity becomes less.

THE GREAT VALUE OF ALUMINIUM, WHICH IS BOTH STRONG AND LIGHT

Perhaps after the case of ice the most important of the specific gravities noticed here is aluminium. This is also a metal, but it is very much lighter than any of the metals in ordinary use. We have only to compare it with iron, and remember that aluminium is a strong thing, to see that its extreme lightness must be of great practical importance.

There are some interesting points in the list of liquids. We have already referred to the case of mercury, and we note the astonishing difference between this liquid metal—the only metal liquid at ordinary temperatures—and all the other liquids. Several of the specific gravities noticed in this list are of great importance in testing the purity and the composition of various things. In the official book that gives instructions to chemists, for instance, they are told that such things as ether or sulphuric acid employed by them must have such and such a specific gravity. The simple method of using a hydrometer provides an easy and quick test of purity.

When we compare milk with blood we notice that milk, which is made by the body from blood, is slightly more watery. It is one of the most important duties of the body to keep the specific gravity of the blood at a constant level. None of the processes with which the blood is concerned can proceed properly unless its specific gravity is constant. If a person goes without water, fluid has to be drawn into his blood-vessels from the tissues around them, in order that the blood shall not become too dense. If, on the other hand, a person takes a great deal of water, this is not allowed to make his blood more watery than it ought to be, and all the resources of his body are immediately brought into action—not in a few hours, but in a minute or two—to get rid of the excess of water as quickly as possible. For this purpose the lungs, the kidneys and the skin are all available.

An interesting point about the specific gravity of sea-water is the manner in which it affects the art of swimming. Swimming and flying are both practical problems which depend upon specific gravity. The higher the specific gravity of the atmosphere, the easier it is to fly; the higher the specific gravity of water, the easier it is to swim.

THE NEXT STORY OF THE EARTH IS ON PAGE 5177.

Philip II receiving a deputation from the Low Countries.

THE STORY OF SPAIN

SPAIN is one of the countries of Europe of which we hear little to-day, yet there were centuries when the name of Spain resounded through the world.

Then her fleets commanded the newly explored seas; her adventurers explored and took possession of continents; the riches of Spain were envied by all nations; and her rulers took upon themselves to decide the fate of Europe. No other nation has ventured to claim such a proud dignity as this.

And before that period of her greatness, when Spain went out into the wide world to call nearly half of it her own, she had been at home a defense for Europe against the fierce Mohammedan attacks from Africa and Asia; she was a champion power of Christendom.

How came she, then, to fall out of the rank of great nations? Why has she dwindled so steadily in importance? What hope is there of a revival of her energy? Has there been a lessening of the quality of her people? No country raises more clearly than Spain the problems of national fitness.

Spain is often spoken of as poor, but she is not poor in natural wealth. She is rich; but her riches are undeveloped. Inert, indolent, behind the times, dreaming contentedly of her hours of faded glory, she offers for study one of the most interesting spectacles in the history of the rise and fall of nations.

The Iberian peninsula, forming the southwestern extremity of Europe, and embracing Spain and Portugal, is a solid land mass, with the fine mountain range of the Pyrenees set between it and the rest of the continent.

Its central part lies high, a tableland averaging 2,500 feet above sea-level, bounded and crossed by mountain ranges averaging 2,500 feet more, with saw-like peaks called Sierras reaching from 7,000 to nearly 9,000 feet.

These are not the loftiest mountains of Spain. The Pyrenees rise over 11,000 feet within the Spanish frontier line, and the most southerly range in Granada, the Sierra Nevada, parallel with the Mediterranean coast, also overtops 11,000 feet. But the central tableland, with its mountain ranges crossed by passes 5,000 feet above sea-level, divides the country into distinct regions, each with its wall of mountains. This has been so important in the history and the life of Spain that we must speak of it first of all.

Through long periods Spain was divided by its mountain ranges into separate kingdoms. Within these mountain walls, with differences of soil, climate and human occupations, we

find differences of race, language and religion. It was only slowly through the ages that Spain came to be regarded as a single country.

It is not unnatural, if we judge by its story, that the peninsula is still divided between two countries, Spain and Portugal. It has been half a dozen countries, and deep differences continue in Spain itself, in human character, in race, language, habits, pursuits, and even in the food in common use. Spain, as it has always been, and as it is to-day, has had its story decided by the lie of the land. That is the foundation of its history, past and present.

THE SQUARE PENINSULA THAT IS MORE THAN TWICE AS BIG AS BRITAIN

Before we glance at the populations that, wave after wave, entered and were absorbed into this mountainous end of Europe, let us, with the help of our map, look at the lie of the land.

Spain, with Portugal, is an almost square peninsula, over 550 miles from north to south and 650 miles from east to west. Spain alone is of rather more than twice the extent of Britain, and Portugal is about the same size as Ireland.

The coast-line of Spain is generally bold; but from the mouth of the river Guadiana nearly to Gibraltar, and again past Alicante and Valencia on the Mediterranean side, it runs low. Nearly the whole of the coast of Portugal is low, and the slope of the great mass of the peninsula, except the northeast, is from east to west, with a slant toward the southwest. That is the general lie of most of the mountain ranges and of all the chief rivers, except the Ebro in the northeast.

Across the north of Spain the Pyrenees extend westward through the ancient kingdom of Navarre, the Basque country, Asturias and Galicia to the open Atlantic. This range takes the general name of the Cantabrian Mountains. Finally it turns southward into northern Portugal.

THE MOUNTAINS THAT PREVENT THE RAIN FROM GOING INLAND

The eastern end of the Pyrenees spreads broadly into Spain and almost covers the rugged province of Catalonia. Between Navarre and Catalonia the Pyrenees sink southward by gradual slopes down into the eastward-sloping valley of the Ebro. Here lay the old kingdom of Aragon.

This whole Pyrenean mountain land, with its extension westward to the Atlantic seaboard, is a northern region quite different from any other in Spain. Rain falls plentifully in the mountainous north and northwest; indeed, there is too much rather than too little rain, and the mountains of Portugal, Galicia and Asturias rob inland Spain of the treasure brought by the Atlantic clouds. The climate of northern Spain is mild. It is a land of grass and flowers and forests.

Southward of the Ebro valley, from the neighborhood of the town of Burgos to the province of Valencia, there runs to the southeast a mass of mountains. They form, on one side, the watershed of the bare, treeless valley of the Ebro and, on the other side, the lofty eastern edge of the great central tableland. Down its westward slope the long rivers Douro, Tagus and Guadiana flow to the Atlantic.

This tableland, lofty, wind-swept, dry, is crossed from east to west by two ranges of mountains. Southward of the Douro, which has the Cantabrian range as its northern watershed, is the principal central mountain range of Spain, passing under various names through the middle of the tableland. The best-known part, north of Madrid, is the Sierra de Guadarrama. The range extends into central Portugal as the Sierra da Estella.

THE OLD KINGDOM IN WHICH THE SPAIN OF TO-DAY BEGAN

On this tableland, north of the range, were the ancient kingdom of Leon, which also extends into the northern mountains and the basin of the Minho, and the kingdom of Old Castile, around which Spain finally gathered into a united nation.

South of the Sierra de Guadarrama, and extending to the Sierra Morena, was New Castile, stretching southeastward to Murcia by the plain of La Mancha, and westward to Portugal across the impoverished sheep-walks of Estremadura. Midway through New Castile run from east to west the mountains of Toledo, forming the watershed between the basins of the Tagus and the Guadiana.

South of the Sierra Morena was the great Moorish province of Andalusia, crossed by mountain ranges, of which the chief is the lofty Sierra Nevada, and drained by the Guadalquivir, the Great River of the Moors, or Wady-el-Kebir.

Here we are in a quite different Spain. The Spain of Seville, Cordova, Malaga and Granada, of hot summers, warm winters,

EUROPE'S FARTHEST WEST—A BIRD'S-EYE VIEW OF SPAIN AND PORTUGAL

THIS MAP OF SPAIN AND PORTUGAL SHOWS THE RIVERS, MOUNTAINS AND CITIES OF THE PENINSULA, WITH THE LITTLE REPUBLIC OF ANDORRA

subtropical growths, rich and beautiful, a land of finely ornamental architecture, comes from a past civilization of rare taste alien to the central and northern parts of the country. It is a region which could be the natural home of a people reared on the neighboring African continent, and here for centuries ruled the Moors at the time when they had reached the highest stage of their civilization.

Spain, we see, has always been a country with varied natural conditions in climate and products. It has seen the rise and decline of great and proud races and frequent changes from power to weakness. And it is still an undeveloped estate of mineral and agricultural wealth, waiting for a generation of people to arrive who will live for the present and the future, instead of resting on a glorious past that is becoming merely a story.

It has been a kind of dead-end, into which advancing tides of people have pressed till they could go no farther. They have then settled down and remained in growing stagnation without outside intercourse between the walled-in mountain regions.

A PORT FOUNDED BY THE PHŒNICIANS THIRTY CENTURIES AGO

The first accounts we have of the people living in the peninsula came from the Greeks, Phœnicians and Romans, who visited the country and described its people as a small, dark-skinned race called Iberians. There is doubt as to what finally happened to these Iberians from whom the peninsula takes its name. But people think that the Basques of the southwestern Pyrenean slopes are the survivors of these ancient inhabitants, who have elsewhere been absorbed by other races. The earliest Greek and Phœnician seafarers came to trade and not to stay, except that as early as 1100 B.C. the Phœnicians are supposed to have founded the port of Cadiz. Much later, when the Phœnicians had founded Carthage as their chief commercial centre, and were cut off from trade with Italy by the Romans, they developed a trade in Spain and founded there a New Carthage. It is now the seaport Cartagena. Later still, in their wars with Rome, they advanced overland through Spain, where they gathered recruits, and passed through France to attack Italy. The Romans, returning the attack, cleared the Carthaginians out of Spain, and finally conquered the whole country, which they held for over four hundred years.

Whom did they find there? By the time of the Roman conquest, and perhaps long before, Celtic tribes had entered the country and had apparently mixed with the Iberian tribes already there.

HOW SPAIN HELPED ROME IN THE DAYS OF HER DECLINE

That the Roman influence was very strong in Spain is proved in several ways. Signs of their works, in aqueducts and irrigation, remain to this day. From Spain came some of their most famous rulers and writers—the great emperors Trajan and Hadrian; and notable authors like Seneca the Younger, Lucan, Martial, and Quintilian, the famous expert in education. Spain, in fact, gave vigor to declining Rome. Latin became so firmly the foundation of the common speech in every part of the peninsula that it was never challenged, except perhaps when the Moors were at the height of their power.

After the withdrawal of the Roman garrisons, early in the fifth century, various German or Gothic tribes poured across the Pyrenees. They overran the country, but were soon absorbed by the population there. They played a very important part in Spain for nearly three hundred years, and added new elements to the Iberian and Celtic strains of population.

In 711 came the most important of all the invasions of Spain. In that year a Moslem Berber chief named Tarik, helped by the enemies of the Gothic king of Spain, Roderic, crossed the Straits of Gibraltar. In eight years he overran nearly the whole peninsula. The Moslems then passed on into France, but were defeated by the Frankish general Charles the Hammer and flung back into Spain. There they ruled absolutely for over four hundred years, and ruled as vassals to Spanish kings for three hundred and fifty years more.

THE MEN OF THE NORTH WHO HELD THEIR OWN AGAINST THE ARABS

The history of Spain through the earlier centuries of Mohammedan occupation was one of the rise of Christian kingdoms in the north and the slow recovery of the country state by state. The mountaineers of the Cantabrian range never were subdued by the Arab

THE ENEMIES OF SPAIN IN RETREAT

For nearly 800 years the Moors ruled in Spain, but gradually were pressed back, until, in 1492, their last stronghold, Granada, surrendered. Here we see King Ferdinand and Queen Isabella receiving the keys of the city from the last of the Moorish kings, who, as he looked back, wept bitterly.

When Napoleon forced his brother Joseph upon the Spaniards as their king, they rose in revolt against the French army that had invaded their country. The English, under Wellington, went to the help of Spain, and the Peninsular War was the result. After much fighting Wellington inflicted a crushing defeat upon the French, who left the town, as shown in this picture by R. Hillingford.

invaders. The Basques and the men of Navarre, Asturias and Galicia rallied at once when the enemy had passed by. And in these districts and in Leon, Castile, Aragon and Catalonia, Christianity rose again, while a lingering warfare went on for centuries with the Moslem power in southern Spain.

The weakness of Moorish government in Spain was that it was as divided as the Christian kingdoms of the north. The invaders had been Arabs and Berbers. The Arabs were the ruling caste and despised the Berbers from the Algerian hills. To the Berbers the Arabs, or Moors, gave the bleak central Spanish plateau, and reserved for themselves the warm, rich valleys of the south. Quarrels and rebellion followed, and the Berbers withdrew to Africa, or fell under the attacks of the original owners of the land. So they ceased to be a buffer between the vigorous northerners and the Moslems of the south.

The strength of the Arab rulers of Andalusia was that they were tolerant in religion and easy-going in taxation. So the Christians of the south found it quite possible to live in comfort there, and the Jews, who formed a numerous and valuable part of the population, had a pleasanter life than they had known under the Gothic kings. The conquered people of the south therefore were by no means eager to change from a not uncomfortable government to the unknown rule of men from over the northern mountains. These were certainly less advanced in taste and culture than the Moors who were beautifying southern Spain.

A GREAT YEAR IN THE HISTORY OF SPAIN AND THE WORLD

The beginning of modern history in Spain came with the marriage of King Ferdinand of Aragon with Queen Isabella of Leon and Castile. It brought all Spain, except Granada, under a single crown, and Granada, the last Moorish stronghold, was captured in 1492, the year that Columbus left Spain to cross the Atlantic. Before that great event the joint sovereigns had established the Spanish Inquisition with the object of bringing all the people of Spain under one religion as well as one monarchy. The Inquisitors began their operations by burning two thousand Jews as heretics. It is one of the ghastly chapters of human history.

After Ferdinand's death Spain had the additional misfortune of falling under the government of Charles V, who dragged her into European wars with which she had no real concern. And Charles's successor, Philip II, the man whose portraits are so familiar to us, and who married the English queen Mary, carried religious persecution into the Low Countries, which he inherited from his father.

Philip's belief that he had a religious mission of conquest led him to attempt the invasion and defeat of England, and for that purpose he gathered his great Armada, the most formidable fleet which up to that time had ever sailed the seas.

THE GREAT DISCOVERY THAT GAVE WEALTH AND POWER TO SPAIN

Spain was now at the height of her power, and seemed without question the greatest nation in the world. She had secured enormous riches in gold and silver from the newly found Western World, which the pope, regarding it as his gift, had put under Spain's guardianship. Her ships commanded the open seas by sheer power of numbers. The Hapsburg emperor Charles V had trained her armies for war, and they were renowned for discipline and bravery. The unlimited scope for discovery and conquest in America aroused the love of adventure in her sons. She had to a large extent cast out the Moors and the Jews who had brought prosperity to southern Spain. The riches and industries of the Low Countries were at her mercy, and there her army, under the greatest and sternest of her generals, waited to cross over to England and bring it into the fold of Catholicism.

No nation was ever nearer being master of the world than Spain at that moment; and the Spaniards knew it. They were as proud at heart as ever ancient Rome was in its days of almost world conquest. The whole Iberian peninsula was theirs, for Portugal had been mastered and annexed, and a large part of Italy. It was a great crisis in the history of the world.

SPAIN'S AMBITIONS LEFT HER FRIENDLESS AMONG THE NATIONS

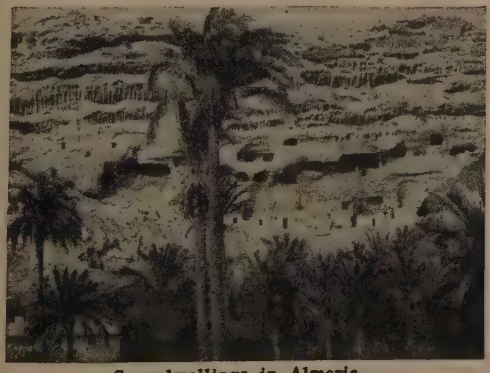
But even at that time a really thoughtful survey of the condition of Spain would have told a different tale, for Spain's ambitious claims, and her methods of stamping out all opposition by force, had left her without friends among the nations.

MOORISH, ROMAN AND SPANISH ARCHITECTURE

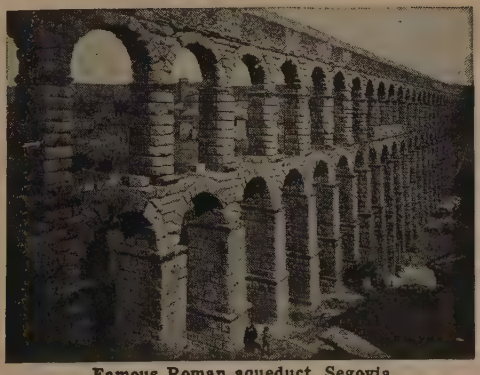
The picturesque old city of Burgos.

Façade of San Pablo, Valladolid.

The Alcazar at Segovia.



Cave-dwellings in Almeria.



Famous Roman aqueduct, Segovia.

The wealth she seized had had a weakening effect on herself, for it led to great extravagance, forced up prices, and did not spur on production at home, which lays firmly the foundations of prosperity. The most enterprising people within her borders had been harshly driven away or cruelly persecuted. And the pride of the adventurers who lived by seizing the wealth of others made them despise work. The many kinds of people in the different regions of the peninsula, who had little communication with each other over the rugged mountains, and were burdened by taxation to support ambitious schemes abroad, were uneasy under the despotic rule which roughly threw them together as one nation. Outwardly Spain looked magnificently strong; inwardly she was badly prepared to stand a sudden shock.

That shock fell on her with startling effect when her mighty Armada, shattered by battle and tempest, defeated and dispersed, failed to make the least impression on England. It was a united England that faced the Spanish foe. With true patriotism the Roman Catholics of England joined with the Protestants in repelling the attack made by Spain.

THE CRUSHING OF THE ARMADA WHICH BROKE THE POWER OF SPAIN

> Such night in England ne'er had been,
> Nor ne'er again shall be,

as that in which the English fleet put out into the Channel to defy the might of Philip, once the husband of an English queen and now bent on the religious conquest of England. But the commander of the English fleet was a Catholic nobleman. England was sound at heart. Not so Spain; under the shock of defeat she crumbled from within.

The descent of Spain was swift and continuous after the Armada's crushing defeat. She was impoverished by foreign wars and torn by internal disturbances, and Portugal regained her independence. When England had taken from Spain the command of the seas in the eighteenth century, Spain made alliance with France, only to meet with defeat after defeat, and at last found herself betrayed by Napoleon and obliged to submit for a time to the weakest of his brothers as her king. Then it was to England that she looked for help, and for years English, Spanish and Portuguese armies fought the French to and fro among the mountains of the peninsula all the way between Lisbon, the Pyrenees and to the gates of Toulouse beyond.

The struggle with Napoleon revealed to the world one of the weaknesses of the Spanish character—an inability to govern so as to satisfy the people governed. The lack of organizing power was seen during the Peninsular War, when the Duke of Wellington, the commander of the British army which freed Spain from Napoleon's grasp, had great difficulty in arranging to work with the Spaniards.

HOW THE SPANISH COLONIES PROCLAIMED THEIR INDEPENDENCE

Across the seas, the immense regions of the American continent owned by Spain by right of discovery and conquest, speaking the Spanish tongue, and occupied considerably by men of Spanish race, took early opportunities of breaking away from the colonizing country. Soon Mexico, Central America and South America (except small parts owned by Britain, Holland and France) became independent countries and republics. It seemed as if the Spanish race had not the secret of maintaining a helpful union and friendliness with the outlying portions of their once proud empire.

Before the nineteenth century closed, the last of the Spanish Indies, West and East, had reached such a state of confusion, through continual war with Spain, that the United States of America took up the cause of the islands, and forcibly gave them representative government. Thus Spain lost Cuba, Puerto Rico and the Philippine Islands, the final fragments of her once vast dominions overseas. Now, counting the Balearic and Canary Islands as outlying parts of the homeland, tiny bits of Africa are the only remaining overseas possession, and hitherto the Spaniards have failed in Africa either to conciliate or to conquer the people they are supposed to rule. War in Morocco has been almost ceaseless and always indecisive for some years past.

THE IGNORANCE THAT KEEPS A RICH COUNTRY POOR

How does it come about that the Spanish nation, once great in adventure, in war and in art—for the painters Velasquez, Murillo and Goya are among the world's great masters (see page 1495)—has failed to keep her place in the front rank?

STRANGE AND BEAUTIFUL VISTAS

The cathedral and the old stone bridge across the Ebro at Saragossa.

The Alcazar at Seville.

Gate of Santa Maria, Burgos.

A quaint village in Estremadura.

A market place in Segovia.

Her people have always kept up the appearance of character and dignity, yet Spain has not been a success. One reason undoubtedly is that the Spaniards have never that freedom of mind which makes for progress. They are quite contented to do as they have always done. Nor have they ever felt the need or value of education. Spain has eleven universities, but her people are uneducated. Nearly half of them can neither read nor write. The country as a whole has no initiative or outlook.

Water-carriers, Caceres.

Old Basque peasants.

Peasant and his wife.

A courtyard in Tarifa.

A porter in old Barcelona.

Peasant's hut, Orihuela.

Mineral riches abound, but it is not Spain that extracts them from her mountains. She has iron, coal, copper, lead, quicksilver, zinc and cobalt, but it is the enterprise of other races that secures their use for the world. She has wheat and wine and oil, and one of the world's best climates for subtropical fruits throughout her southern and eastern provinces. Alicante gives a name to the world for grapes, Valencia for raisins, and Barcelona for nuts, and the Spanish cork forests bottle the wines of the world. She has vast hilly tracts suitable for sheep-rearing and cattle-breeding, and the total of her pastoral products is very considerable. In short, Spain is richly endowed with a wide variety of gifts, though her climate is tantalizingly bleak or baking on her lofty central tableland, and spreads reminders of African deserts about her southern provinces.

But the idea of energetic development is almost confined to the northeastern province of Catalonia. This proud and poor Castile regards as a region of rude freethinkers and republicans. The manner in which Spain lags contentedly behind the advancing world is most clearly shown in her roads and railways. There are thousands of Spanish villages which simply have no roads of the kind

THE ABIDING STRENGTH OF STONE

The old city of Salamanca on the river Tormes.

Roman aqueduct near Tarragona.

The hill city of Toledo.

The cathedral at Valencia.

The walled city of Avila.

The river Guadalquivir at Seville.

felt to be indispensable in other countries. Spain makes poor use of her ten thousand miles of railway, using them with infinite leisure.

Until 1931 Spain remained a monarchy, under Alfonso XIII, king since his birth in 1886. There was much unrest, however, throughout Alfonso's reign. After the World War, in which Spain remained neutral, there was a dictatorship under General Primo de Rivera. This lasted from 1923 to 1930. The following year, finally, the people rose in almost bloodless revolution and forced Alfonso to retire. A republic was established and a new constitution, with many radical features, was worked out. The new government, however, though it shows signs of revivifying Spain, has met with considerable difficulties.

The amazing change of scenery in a journey through Spain

The railway entrances to Spain are west and east of the Pyrenees, the western line leading to the mineral-bearing northern province, and onward to Madrid in the middle of the central tableland. The eastern line leads from Toulouse to the vigorous and prosperous manufacturing district of Catalonia, with its dominating city of Barcelona.

Following the northern line, the beautiful seaside resort of San Sebastian, with 75,000 people, is soon reached. Farther westward are the mineral-exporting port of Bilbao in the Basque country, the port of Santander, the mineral town of Oviedo in Asturias; and in Galicia the ports of Corunna and Vigo. This is the rich district of the mountainous north between the Cantabrian range and the sea. Railways from the prosperous north meet at the inland junction of Palencia. Close by is Burgos, once the capital of Old Castile, with a fine Gothic cathedral.

Before reaching Madrid the southward line passes through Valladolid, a university town with a population of 78,000. The famous university town of Salamanca, the scene of one of Wellington's greatest victories, lies more to the westward, and has 36,000 people. Segovia, north of the central mountain chain, has some magnificent Roman remains. South of Madrid is the city of Toledo, once famous for its sword-blades, and long the stronghold of Moslem power on the Castilian plateau. Later it was the capital of Castile.

The central town where all the railways meet

Madrid is an artificial city built to be a central capital, but it has increased its population to over four-fifths of a million, largely as the railway junction for the middle of Spain. Its climate, changing from great heat to great cold, and its situation on a bare and unproductive country are disadvantages, but it is the centre of government. Its picture galleries are among the most famous in Europe.

The eastern railway system of Spain passes through Barcelona, by far the most prosperous and up-to-date of Spanish cities, a crowded manufacturing centre for cotton, lace, woolen and linen goods, as well as a much-frequented port. It has 991,000 people. The towns farther south in the great fruit-growing districts are: Valencia, Alicante, Murcia and the ancient seaport Cartagena. Murcia is a mineral-producing district, especially rich in lead. The chief town in the Ebro valley is Saragossa. It has a university, and lives in history for its heroic defense against the French in the Peninsular War.

Southern Spain almost rivals the north it its mineral wealth. It has iron, copper, coal and lead. To the visitor its attractions are the fine scenery and the amazing wealth of architecture left by the Moors in the cities they beautified: Seville, with the Giralda Tower; Granada, with the Alhambra; and Cordova (see pages 5473-80). Other southern cities are: Malaga, with a magnificent mosque, now a cathedral; Cadiz, and Jerez.

One of the great drawbacks of Spain is that none of its rivers, except the Guadalquivir for part of its lower course, is available for navigation, or for irrigation where it is most needed. In their upper courses they often run in deep channels and dry up in the hottest weather. The lower courses of the Douro and the Tagus are in Portugal and useless to Spain. The Guadalquivir is an all-the-year-round river, because it is fed in summer by the melting snows of the Sierra Nevada range.

Spain has a population of 28,000,000, and shows a gradual increase. There is no reason why, if her people can reach the intellectual freedom and fuller education they have missed so long, she should not rise again to higher glory than she ever had in the old days.

THE NEXT STORY OF ALL COUNTRIES IS ON PAGE 5183.

HOW THE ORANGES COME TO US

Picking oranges in Valencia.

Grading the oranges.

Wrapping up the oranges.

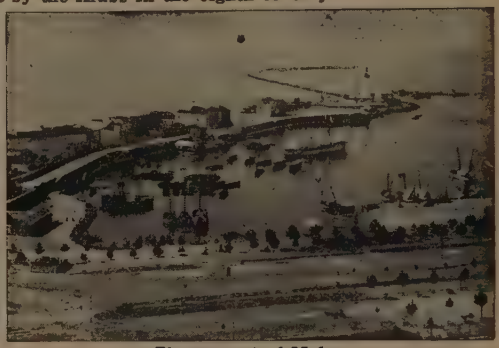
Packing oranges for export.

Loading ships in the docks at Valencia.

HERE AND THERE IN SPAIN

Bridge across the Guadalquivir, built by the Arabs in the eighth century.

A corner of the town of Bilbao.



The seaport of Malaga.

The ancient port of Cartagena.

The Carrera de Darro, Granada.

A bridge across the Pisuerga at Valladolid.

WORKS AND WORKERS OF SPAIN

A great steel works at Bilbao.

Girls in a pottery factory, Huelva.

Mats and baskets of Esparto grass.

In a cork yard.

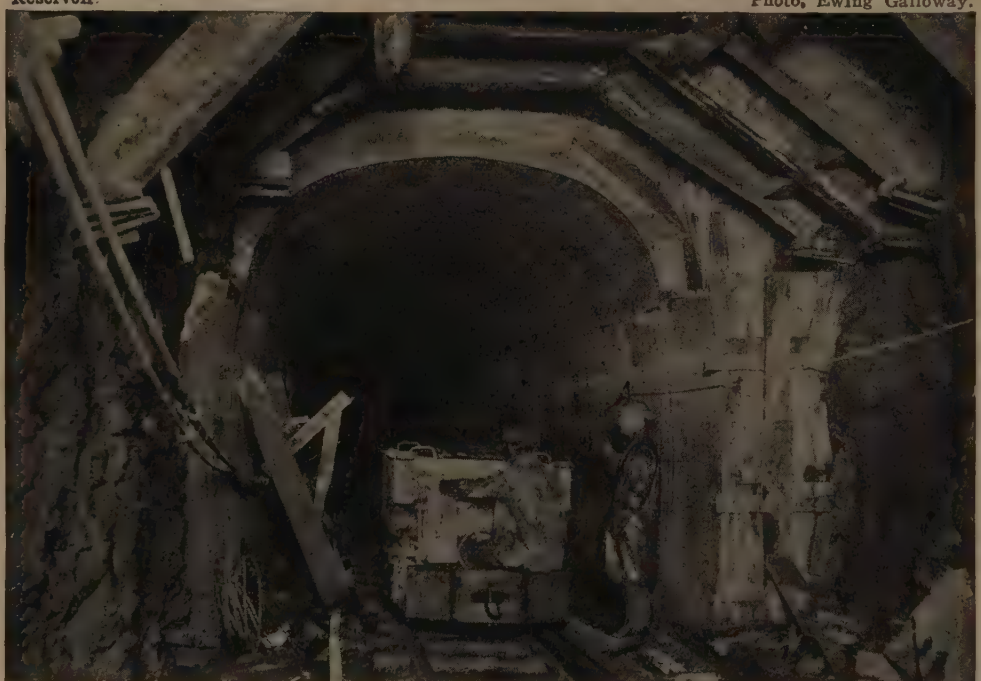
A pyramid of salt in Cadiz.

Gathering mulberry leaves.

THE MOST DISTANT OF THE RESERVOIRS

At Gilboa, 132 miles from the New York City line, a great dam 182 feet high was constructed across Schoharie Creek. The village was removed, and the site is now the bottom of the reservoir. This reservoir holds only twenty-two billion gallons of water, which is led into the much larger Ashokan Reservoir.

Photo, Ewing Galloway.



Schoharie Creek naturally flows northward, but the water from this reservoir is made to flow southward through the Shandaken tunnel. This is over eighteen miles long and is the longest tunnel in the world. It empties into Esopus Creek, and then into the Ashokan Reservoir thirty-four miles below Gilboa Dam.

WHAT THIS STORY TELLS US

As cities grow, the problem of securing enough good water becomes more and more serious. In this story you are told how one city has had to spend nearly $200,000,000 to bring water over a hundred miles, through mountains, across valleys and under rivers. Thousands of men worked for years to do this, and the story of what has been done seems impossible to believe. Though the cost seems enormous, it is money well spent, for if the city should be without water a single day, the cost in human life and property might easily be greater than the cost of the whole work.

A RIVER UNDER A CITY

WHEN population is small and most people live in the country or in villages, water is obtained from springs or wells. When villages grow into towns and then into cities, the supply is no longer sufficient, and water must be brought from outside. In most towns and small cities it is not a very difficult matter to get a sufficient supply of water, but the larger the city, the more difficult it is to get a large quantity of water pure enough to use.

Greater New York has about 7,000,000 people, and the population is constantly increasing. This great city adds to itself every year what most of us would call quite an important city, and, besides, there are always present strangers and visitors enough to make several other cities.

Nearly a hundred years ago the growing city had gone about forty miles into the country for a supply. Fifty years later another aqueduct was built, but the population soon grew up to the increased supply. During a summer in which less rain than usual fell, the water in the reservoirs became dangerously low. If the supply failed even for a single day, disease would surely follow, and also the factories would suffer much loss. So engineers were sent to examine all the streams around the city and decide where a larger supply of pure water could be found. These engineers reported that the nearest large supply of good water was in the Catskill Mountains, over a hundred miles away, and on the other side of the Hudson River.

Work was soon begun, and thousands of men worked for more than seven years to bring the water to the city. This is the largest enterprise of the kind ever undertaken. First the land for the reservoir was bought and the ground cleared. Seven villages, sheltering about two thousand persons, were destroyed, thirty-two cemeteries were moved, eleven miles of railway which crossed the land chosen for the new lake were moved to one side, and the Ashokan Dam was built across Esopus Creek, and extended to the hills on each side in order to make a lake to hold the water.

This great dam is nearly a mile long and is 220 feet high from the creek-bed. At the bottom it is 190 feet—nearly a city block—thick, gradually lessening to 23 feet at the top, along which a road runs. All of it is not built of stone, however, but only that part against which the full weight of the water presses. Much of it is really two earthen embankments with concrete centres. This dam makes a lake 40 miles around and 190 feet deep at the deepest part. It can hold, when full, enough water to cover the whole of Manhattan Island 30 feet deep.

This work was hardly completed when it was seen that soon more water

would be needed. Thirty-four miles farther north was Schoharie Creek, but this stream flowed north instead of south. So the little village of Gilboa, which had stood for over a century, was destroyed, and a great dam was built across the creek. The valley is narrow, and the Schoharie Reservoir is not so large as the Ashokan. The Shandaken Tunnel, the longest in the world—over eighteen miles—carries the water under the hills into Esopus Creek fifteen miles above the Ashokan Reservoir, which holds the waters of both creeks.

The water then goes from the great tunnels. When deep valleys or streams were to be crossed, either tunnels were driven far beneath them, or else great iron pipes lined and covered with concrete led the water across the valley and up the slope of the hills.

When the water reached the Hudson River there was another problem. The river is wide and deep, and the rock in the bed of the river is soft and full of seams. Finally, after boring deep down, hard rock was found. So on each side of the river a shaft was sunk 1,100 feet, and men began to dig and to blast a tunnel toward the centre of the river.

The Kensico Reservoir is seventy-five miles below the great Ashokan Reservoir, and holds enough water to supply the city several weeks, if it should be necessary to shut off the water from that lake. This is the lower side of the Kensico Dam, showing the attractive park which has been laid out. The reservoir is deeper than it would seem from this picture. A broad roadway runs along the top of the dam.

Ashokan Reservoir into the Kensico Reservoir, seventy-five miles nearer the city, so that if an accident occurred at the upper reservoir, there would still be water enough in store to last the city several weeks. There is a fourth reservoir on the edge of the city, and from it the water is led under the city.

The picture opposite shows how the water is led from the great lake. Where the ground slopes only slightly the great aqueduct, built of concrete, was laid in a ditch dug for the purpose, and then was covered with earth. At such places the aqueduct is 17 feet high and more than 17 feet wide. When hills were reached tunnels were driven through them. There are twenty-four of these

Think of it! Eleven hundred feet below the surface of the earth two sets of men tunneling toward each other! So carefully were the calculations made that the two tunnels came together under the river-bed just as the engineers had planned. This tunnel was also lined with concrete. So when the water reaches the great river it drops 1,114 feet, flows under the river-bed, and then rises again near the surface of the ground, and continues its way to the third reservoir. Smaller streams were crossed, or rather burrowed under, in the same way.

But when the city was reached the work grew even more interesting. The foundations of great buildings go far down into the earth. Tunnels for rail-

WHERE THE WATER BEGINS ITS JOURNEY

The Ashokan Reservoir, a hundred miles from New York, is divided into two parts, both of which are shown. The West basin is the nearer, and the East basin is beyond the dividing dike and the Ashokan Bridge. A roadway crosses the reservoir here. Both basins together contain enough water to cover Manhattan Island thirty feet deep. The white building on the dike is a gatehouse.

You have learned that oxygen burns up dead matter. At both the Ashokan and the Kensico reservoirs are aerators. Every drop of water, before passing into the aqueducts, is thrown up in a fine spray so that it comes in contact with the air. By this means gases and vegetable matter which might give a slight taste or odor are destroyed. The aqueduct is under the building in the centre.

roads cross the city. Under every street is a tangle of sewers, gas pipes, water pipes, tubes for electric wires, telephone wires, and tubes through which letters are sent with the speed of an express train. None of these must be interfered with. Besides, the force of the water struggling to break out is enormous. If it should break out, men, horses, cars and buildings would be swept away by the terrible force of the stream coming from deep down in the earth.

So the great underground river was carried far below the surface—so far that there is always at least 150 feet of solid rock above the imprisoned water. Along the path marked out for the tunnel, shafts were sunk deep down into the ground, just as was done where the water passed under the Hudson, and with dynamite and pick the way for the water was built. The broken rock was loaded into cars, brought to the foot of the shafts, drawn to the surface and hauled away. As the digging went on there came a day when the men from the shaft at 150th Street, say, working toward the south, could hear the men from the 135th Street shaft working north. Then the final blast was set off and the workers met. From every shaft men worked in two directions to meet those working toward them.

In lower New York the rock was bad, and so for a considerable distance the tunnel there is 750 feet below the surface. It passes under the East River into Brooklyn, and there divides. Two great pipes go across the Narrows to Staten Island, which is a part of New York City, and empty into a reservoir 159 miles from the Gilboa Dam days after the water first entered the pipe.

The tunnel underneath the city is also lined with concrete, so that even if there should be a seam in the rock, no water can escape. At every shaft great iron pipes rise to join the water mains laid just under the surface of the street, and from which the small pipes lead into the houses.

The pipes through which the water flows from Brooklyn to Staten Island were laid like this. The front boat dredged a channel, and the sections of the pipe were joined on the submerged bridge, which was moved forward as sections of pipe were added, leaving the pipe in the trench.

So the water which runs from a faucet in Staten Island fell in the form of rain on the slopes of the Catskill Mountains, found its way into the great reservoirs and passed into the great aqueduct. Its way led over hill and valley, through mountains, and under the Hudson River, to another reservoir and then another. Then far below the city streets a tunnel eleven feet in diameter leads on far below the East River into Brooklyn. Then some of the water goes under New York Bay to Staten Island, the end of the marvelous underground river.

Constructing such a vast system of reservoirs, tunnels and aqueducts is not

HOW THE AQUEDUCT WAS BUILT

Tunnels were blasted through 24 hills or mountains, and lined with concrete. These tunnels were also over 17 feet high. A railroad train can easily pass through them.

Where rock on a hill or valley is weak, three steel siphons 7 to 11 feet in diameter carry the water. They are lined with cement and covered with concrete to make them stronger.

Where the slope was not too great the aqueduct was built like this. It is a great concrete horseshoe, 17 feet high and 17 feet 6 inches wide, resting on concrete foundations. In the lower part the walls are more than 5 feet thick. When completed the ditch was filled up, and several feet of earth were heaped over the top. There are 55 miles which were constructed in this manner. On beyond you can see the aqueduct disappearing into the hill. Above you can see a tunnel through a hill or mountain before it was joined to a section like this.

Unless otherwise specified, pictures by courtesy of Board of Water Supply.

Photo, courtesy Scientific American.

The East River once flowed over lower Manhattan Island and wore out a deep channel. The rock below is decayed, and so it was necessary to sink the tunnel 752 feet below the surface. The Woolworth Building upside down would barely touch the tunnel.

all of the task. A small army of men is continually employed to keep the water flowing and to look after its quality. Special police patrol the water-shed to see that the water is not polluted. Inspectors constantly examine the whole system to discover any sign of weakness. Many men are necessary to manage the great gates. Chemists and bacteriologists are constantly at work to discover any harmful or unpleasant substances which may get into the water in spite of the vigilance of the patrol.

Harmful bacteria are killed by introducing small amounts of chlorine into the water at some points. Only enough is introduced to kill the bacteria, and no free chlorine is left in the water. Sometimes the water may not be quite clear after heavy rains. Small amounts of alum will cause the tiny particles to settle to the bottom.

The quality of the water is sometimes different at different depths. The gates are so arranged that the most desirable water can be drawn, whether it comes from the top, middle or bottom of the reservoir. The two basins of the Ashokan Reservoir can be separated entirely and water be drawn from whichever basin contains the better water. So you see that eternal vigilance is the price of pure water.

Taken as a whole, the system is one of the greatest engineering projects ever undertaken; and yet it will not long serve the needs of the people. The engineers estimate that if the consumption of water continues to increase at its present rate, by the year 1935, or shortly after, the city must go farther for water.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5167.

A group of Camp Fire Girls from Sandusky, Ohio, meets around the hearth.

THE CAMP FIRE GIRLS

GIRLS of to-day are very lucky beings. If we look back a hundred years we must feel sorry for the girls who lived then. Our great-grandmothers would have been horrified if their daughters had tried to play or go about as almost every girl does to-day. As for girls "camping-out"—no great-grandmother could possibly have imagined such a thing! Even twenty-five years ago, when girls were allowed a great deal of freedom, it was a rare thing for camps to be devoted entirely to girls. Parents would take their families out camping, and boys were allowed to go out to the woods in groups. But there were no organizations which encouraged girls to join together and enjoy life in the great out-of-doors. When boys began to join the Scouts, their sisters looked at them with envy. But fortunately someone decided that there was no reason in the world why the sisters should not have their own organization. Girls can swim. They can paddle or go on hikes. They can sew or use tools. They can cook or signal with flags. They can learn wood craft. Those things, and hosts of others, girls can do if someone will teach them or guide them as the boys are taught and guided.

Camp Fire Girls, founded in 1912, is a program of leisure time activities for girls ten years of age and over. Girls are encouraged to develop interests and skills in seven different fields: Hand Craft, Home Craft, Health Craft, Camping, Nature Lore, Business, and Citizenship. Each of the groups has not less than six nor more than twenty members, and must have as leader, or guardian, a woman at least eighteen years of age. Each girl pays annual dues of one dollar, which she is encouraged to earn. Application blanks are sent upon request to the National Headquarters in New York. As soon as the blank, properly filled out, together with the dues of each member, is received at Camp Fire Headquarters in New York, the guardian receives her certificate and the group a charter. The group may then begin to work for honors.

The Camp Fire honors are things to be done. There are over eight hundred of these honors, and they cover every type of thing a girl wants to do or has to do. When a girl fulfills the requirements for an honor, she receives an honor bead. These honor beads are not rewards but records of attainment.

The honors are grouped under seven crafts, each craft having its symbolic color. Home Craft (flame color, for the hearth fire) includes such honors as cooking, marketing, taking care of homes, looking after a baby. Health Craft (red, for red blood) includes honors in swimming, hiking, snowshoeing, sleeping a certain number of hours. Hand Craft (green, for creation) includes all sorts of handicrafts from trimming a hat to making a clay bowl or designing a book-plate. Nature Lore (blue, for the blue of the sky) includes knowing about trees and stars and the rest of nature, having a wild-flower garden, or training a bird or a wild animal. Camp Craft (brown, for the earth and the trunks of trees) includes all sorts of picnicking and camping knowledge, such as rolling a poncho, making a rain-proof shelter, frying eggs on a hot stone or baking beans in a hole, and sleeping out of doors on the ground. Business Craft (yellow, for gold) includes many honors in thrift, budget-making, earning money, going to night school outside of business hours, etc. Citizenship, or Patriotism (red, white and blue) includes such honors as helping to build a community fireplace, killing destructive pests, like moths or tent caterpillars, or taking part in community celebrations.

CAMP FIRE GIRLS MAY ATTAIN THREE RANKS

There are three ranks that a Camp Fire Girl may attain. The first rank is that of Wood Gatherer, and is earned by winning fourteen honors, designing and making a beaded headband on which the girl uses her symbol, keeping the Camp Fire health chart, and fulfilling certain other requirements. The Wood Gatherer wears a silver ring. The next rank is that of Fire Maker, and to earn that a girl must have fulfilled more difficult requirements, including the preparation of two dinners for her group. The third rank, that of Torch Bearer, is awarded to the girl who has attained definite skill in one craft, and capacity for leadership.

Each rank has a "desire." There are no pledges for a Camp Fire Girl: the girl only expresses her desire to follow the organization's law. The Camp Fire Law is: Seek beauty; give service; pursue knowledge; be trustworthy; hold on to health; glorify work and be happy.

To celebrate the birthday of the organization, which comes in March, a special national project is carried on by all the Camp Fire Girls each year. These projects have included Tree Planting, Flower Gardening, Study of the American Indian, International Friendship, Home Decoration, and many others. A recent project which all the girls enjoyed very much was called Making the Most of Me, and involved study of dress design, suiting clothes to type, and the relation of health, manners, and mental alertness to personality. The girls designed complete wardrobes to suit their types, and made their own books of manners. Another project of great interest was Hobbies, when girls all over the country chose the hobbies they would like to work on. Some of them made collections and scrapbooks, worked on pottery or music or interior decoration, built model stage sets, designed costumes for characters in a play, went on nature hikes to observe and jot down things in their notebooks, tried out new recipes in the kitchen, or went here and there with their cameras, taking photographs of everything that interested them.

These are by no means all the activities of the Camp Fire Girls. Besides all this fun and service they have the beauty of their ceremonial meetings, their ceremonial gown and their Camp Fire Symbolism.

A DAY AT CAMP

Almost every Camp Fire Girl goes camping for at least one week every summer. The cities that support local executives who are in charge of the Camp Fire work have their own big camps somewhere not far from the city. Most of these camps have very beautiful camp sites in the mountains or on the shore of some lake or river or the ocean. The girls live in tents or cabins, and share a common dining-room and assembly-room. In the bigger camps from one to two hundred girls are in camp at one time. The camp period usually lasts two weeks, which means that every two weeks many girls go home and new girls come. This arrangement gives all the girls in the community an opportunity to use the camp. In charge of the large camp are a camp director and camp councilors. There are special councilors for swim-

THINGS CAMP FIRE GIRLS MUST KNOW

The picture shows Camp Fire guardians at a national training camp learning how to put up a tent. Camp Fire Girls win Camp Craft honors when they can erect the tents themselves, and for sleeping five nights on the ground. They are expected to camp at least one week during the year and to live on schedule.

Here we see a group of Camp Fire Girls from Red River Valley Camp, Fargo, North Dakota, building a special kind of fire known as a log cabin fire. Anyone who looks closely at the logs will see the reason why.

Camp Fire directors showing at a national Camp Fire training camp how to roll a poncho. The girls must know how to prepare a poncho for an overnight hike, and many practical details of camp life.

ming, handicraft, nature work, dancing, dramatics and so on.

Wakened by a reveille from the camp bugler, the girls open their eyes to the freshness of a sunny day, hop into their clothes and get ready for a good breakfast. Those who feel particularly energetic may want to take a dip in the lake or river first. At breakfast there is enthusiastic talk about what everyone is going to do. It may be the day of a special event—a gypsy trip by covered wagon when the whole camp will journey for two or three days, sleeping on the ground and cooking over campfires, or a canoe trip up the river for girls who are expert swimmers and paddlers, or a big clam-bake on the beach across the bay.

After tent inspection there is often morning "sing," out under the trees, or around the fire if it is cold. The girls sing and discuss their plans for the day. Sometimes at these assemblies the girls and councilors give one-minute talks on something that they are interested in. Assembly lasts only five or ten minutes; then the craft classes or gypsy trips, or whatever is the programme of the day, begins.

You can see what these Camp Seattle (Washington) girls look like when they are up a tree. How old were you when you read Robinson Crusoe and decided to build a house in the old apple tree, if you could not manage to get yourself cast away on a desert island? This group of Camp Fire Girls actually built the house and the stairs too.

Some girls will go off to attend first-aid, or pottery or wood-craft classes. There is great fun in learning to make camp furniture and equipment from the materials found in the woods. Others join in the rowing or paddling classes. Still others may be busy making costumes for a play that some of the girls have written and are going to present the next afternoon. Some girls may start off with the nature councilor into the woods to find

HIKING AND COOKING ARE LAND SPORTS

In faraway India people wind little strips of meat on skewers and roast them over the open fire, making an exceedingly tasty dish known as "Kabob." Camp Fire Girls know what kabobs are too, and here we see them roasting kabobs and bread snakes for a big feast at the end of a hike at Lake Cohasset in Harriman Interstate Park, New York.

Making fires for outdoor cooking is a part of Camp Craft honors. These open fires are often started without matches. Sometimes the girls make biscuits in a reflector oven, or kabobs on a stick over the open fire. Sometimes potatoes are roasted under the bed of coals provided by the camp fire. Whatever they cook is good, and their hungry companions appreciate it.

specimens for the camp herbarium. There are always enough things in progress to satisfy the wants of every girl and to keep her busy and interested until time for morning swim. Camps situated on tidal waters have to arrange their programmes to fit in with the tides. Other camps usually have two swimming periods a day, when all the girls get into the water. There are always patrols of Red Cross Life Savers, and boats which guard the swimmers and keep them within the swimming limits.

FOUR SWIMMING TESTS SEPARATE DIFFERENT CLASSES OF SWIMMERS

The Camp Fire Girls have four swimming tests which they all try to pass every summer. The first is the Pollywog test. The requirements for this are: Duck three times; float fifteen seconds, and swim two strokes any style twenty-five yards each. The second is the Frog test, and the requirements are a bit harder: Swim fifty yards; do dead-man's float fifteen seconds; bring up a saucer in four feet of water; float on back two minutes or tread water, hands out, two minutes; swim ten yards on back, and break wrist and front strangle holds on land.

The third is the Fish test. The girls who pass this test are really swimmers. The requirements are: Swim one hundred yards any style; show excellency in any style of stroke; bring up a cup in six feet of water; be able to make a straight dive; swim twenty-five yards on back, using feet only; tow a person fifteen feet; break three strangle holds standing in water to neck; assist Pollywogs for three swimming periods, and explain Schafer method of resuscitation after-treatment of the apparently drowned.

The fourth and highest test is that of Flying Fish. These requirements are really hard, and the girls who are "Flying Fish" can be trusted in the boats in rough weather and are given patrol duty. The requirements are: Handle a boat in all kinds of weather (including landing and tying boat to float); perform artificial respiration by Schafer method; swim five hundred yards at one time; swim one mile in three days, evenly divided; bring up cup in eight feet of water; do three standard dives, and pass life-saving requirements. "Flying Fish" assist the swimming councilor in teaching girls to swim, and form a boat patrol during swimming periods.

GIPSY TRIPS GIVE GIRLS CHANCE TO SHOW WOOD CRAFT

In the afternoon there is always a quiet, or rest, hour in which the girls go to their tents and remain quiet so that those who wish to sleep may do so. Being active in the open air all morning does make girls sleepy, and right after lunch is the time for rest. After rest hour the girls, dressed up in a white middy, do as they want. Some go on hikes with a councilor. Some play games like paddle tennis, volley ball, archery or Badminton. Perhaps the camp has planned a treasure hunt; then all the girls turn out to find the buried treasure. If it is a pirate treasure hunt, the girls array themselves first as pirates, and divide in bands to seek the clues that will direct them to the treasure. Such treasure as books, a box of candy, a bag of shiny pennies are buried.

Perhaps a group of girls will tie their brilliant middy ties around their heads and start off on a gipsy trip. They may go in the scow or the rowboat or on foot with their packs on their backs until they find a nice place to set up their overnight camp. Some will get the fire started and cook the supper, while others are cutting down boughs for their beds and setting up their shelters, if rain is threatening. After supper the gipsies sit about the fire and sing. Someone has brought her ukulele. There may be stories, too, and charades before it is time to turn in. By nine o'clock all is still, and each gipsy is sinking off to sleep under the stars or snugly between her ponchos, paying no attention to the first spatterings of rain. A real Camp Fire Girl makes her bed so well that she knows that she and her possessions will be as dry as if she were at home.

Back at camp the girls who are left have been cooking their evening meal over open fires on the beach. They may have made biscuits in a reflector oven and cooked chickens in a hole in the ground. Or they may have made kabobs on a stick over the open fire. Whatever it was that they cooked, you may be sure that it was very good, and no one was unhappy because she had not gone on the gipsy trip. Besides, everyone knows that she will have her turn to go gipsying if she wants to go. And at camp, just as on the overnight trip, there are songs or impromptu dramatics or games around

CAMP FIRE RECREATION ON WATER

On the annual summer camping trip swimming is one of the greatest attractions. Camp Fire Girls have four swimming tests which they all try to pass to gain Health Craft honors. These tests are called the Pollywog test, the Frog test, the Fish test and the Flying Fish test. "Flying Fish" assist the swimming councilor in teaching girls to swim, and they form a boat patrol during swimming period.

Where a camp is pitched on the shores of a lake, canoeing is always a delight. The girls are taught to handle the dainty craft as a canoe should be handled. Skilled swimmers are always near by if a novice tries her hand at paddling. To enter a canoe properly is first taught. That is followed by lessons in the use of the paddle. Steering is the next step. The more familiar a girl becomes with canoeing, the better she loves it.

Photos, courtesy Camp Fire Girls, Inc.

the fire, or a stunt or dress-up party at the hall. And at nine o'clock the good-night song or bugle sounds over the water, and then all is still—really still, for no Camp Fire Girl wants to spoil the record of her tent by talking after taps.

In communities where there is no large camp for the Camp Fire Girls, groups go off camping by themselves. Sometimes they camp in a cottage; sometimes they pitch a tent on the shores of a lake. Their guardian or some older person goes with them. They follow much the same programme as is followed in the large camps. They try, as do the Camp Fire Girls who are camping any place, to keep up the Camp Fire camping standards.

The first thing a Camp Fire Girl does is to choose her Camp Fire name. This she does not do in a hurry, but carefully, for she wants her new name to represent an idea and an ideal. Many times the girls take certain things in themselves which they wish to overcome. They choose a name which will express that desire, or they choose a name which expresses what they most want to be, or an ideal they feel they need. As a rule, Indian words are used, but many girls find their names are suggested to them in poems or legends. A symbol is the sign for an idea. Camp Fire uses symbolism because by its use things can be enriched with new meaning and beauty. A design on a vase, for instance, or on a dress, is more than just a pleasing arrangement of lines and colors if it has meaning.

Camp Fire Girls are trained for citizenship.

CAMP FIRE SYMBOLISM REPRESENTS GIRLS' IDEALS

Indian symbolism was taken as a beginning for Camp Fire symbolism because the Indians used nature almost entirely in their symbolism and because it is very simple in form and idea. The Camp Fire Girls have adapted their symbolism to fit their own needs and ideas. So when each Camp Fire Girl has her name, she designs her own symbol, which she uses in decoration of her ceremonial gown and in any other way she may choose to use it. Many times Camp Fire Girls weave their autobiographies in beads, having a symbol which they have designed to represent each item.

Camp Fire Girls have no uniform. When desiring to dress alike, they wear a dark blue skirt or bloomers, a white middy, a black or red sailor's tie, a dark blue tam and arm band. But they have a ceremonial gown which is worn only at council fires and ceremonial meetings. The gown has been adapted from the Indian girl's dress. It is made of tan khaki and is trimmed with brown leather fringe. Every Camp Fire Girl's gown is like that of every other Camp Fire Girl except for the decoration she cares to put upon it. Each girl decorates her own gown with symbols of her achievements and her good times and adventures. The gown is then a record.

BEAUTY AND DIGNITY MARK COUNCIL FIRE

Once every two months at least the Camp Fire Girls have a Council Fire. This is a meeting around an open fire (or candles to symbolize the fire if the fire is not possible) where the girls sing their songs, repeat their laws and desires, and dedicate themselves to their ideals. They have simple rituals expressing their purpose and ideals, which give beauty and dignity to the meeting. Once a year all the groups of Camp Fire Girls in a community meet for a Grand Council Fire.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5267.

WHAT THIS STORY TELLS US

WE have already told you in another place about Peter Pan, the boy who wouldn't grow up. Now we come to another play which also will long be popular among boys and girls as well as their elders. This is the fairy play The Blue Bird by the famous Belgian writer Maurice Maeterlinck. In it he tells the story of the search for happiness. The two children go over the world seeking the blue bird, which we find stands for happiness. They find many birds which seem blue in certain lights, but when closely examined are seen to be of some other color. Finally, after enduring many dangers and becoming weary with the search, they return home and find the blue bird there, where it has been all the time. Their eyes were not keen enough to see it until after they had searched far and wide and had tested the friendship of all their companions.

THE BLUE BIRD

ONE Christmas Eve a little boy and girl named Tyltyl and Mytyl were sound asleep in their little cots. Their mother had just crept in to tuck them up in bed, and turning down the lamp, had tiptoed out again. She felt a little sad, because owing to the stormy weather their daddy was not able to go to work in the forest; and she had no money to buy presents for their stockings. Suddenly the children opened their eyes and sat up in bed with a strange feeling that something was about to happen. The light in the lamp flickered faintly, and a soft yellow glow came through the closed shutters of the windows.

"Mytyl, are you asleep?" whispered Tyltyl.

"No, are you?" returned Mytyl.

"No!" retorted Tyltyl with boyish scorn. "How can I be asleep when I'm talking to you?"

For a few moments they whispered together. Then Tyltyl said abruptly: "I have an idea!"

"What?" asked Mytyl eagerly.

"See the light coming through the shutters. The rich children opposite are having a party. Let's get up and look."

"But we mustn't," said Mytyl, taken aback at her big brother's daring.

"Why not?" returned Tyltyl, with a magnificent scorn for consequences. Hand in hand they ran across the room in their bare feet, and pushing back the shutters, looked eagerly out. Sure enough, through the windows of the big house across the street they could see children in beautiful frocks dancing about a big Christmas tree laden with presents. Suddenly, as Tyltyl and Mytyl knelt on the stool by the window, pressing their noses against the cold pane, a loud knock sounded upon their door.

"What's that?" exclaimed Tyltyl, startled.

As he spoke the door slowly opened and a little old woman stepped into the room. She was dressed all in green with a big red hood, and she leaned heavily upon a big ebony stick.

"I am the Fairy Bérylune," said the little old woman. "Have you here the bird that is blue or the grass that sings? I need the blue bird for my little girl, who is very ill."

There was a moment's silence.

"Tyltyl has a bird," ventured Mytyl timidly.

"Where is the bird?" asked the Fairy.

"Over there in the cage," said Tyltyl.

The Fairy hobbled over to the cage and looked at the bird with her sharp little eyes.

"I don't want it," she said shortly. "It is not blue enough. I must absolutely have the Blue Bird. It stands for happiness, and my little girl cannot be well until she is happy. You will have to go and find for me the one I want. Get dressed at once, for you'll have to start right away."

"But—" objected Tyltyl, "we have no shoes."

"That doesn't matter," said the Fairy, "I will give you a magic hat with a diamond in front to help you in your search for the Blue Bird. It will give you the power to see things as they really are. Press the top, you can see the soul of things. Turn the diamond to one side and you will see the past. Turn it to the other and you will see the future."

As she spoke the Fairy pushed a little green hat firmly down upon Tyltyl's head.

"Now turn the diamond," she commanded.

As Tyltyl turned it a wonderful change came over everything in the room. The old Fairy became a princess of marvelous beauty. The cottage walls suddenly became blue and transparent as sapphire, and gleamed and sparkled like precious stones. The souls of the loaves in the oven, in the form of little men in crust-colored garments, whisked out of the Bread. The Dog and the Cat, lying quietly by the hearth, woke up and began to talk. The soul of Water, streaming and tearful, came pouring out of the tap. The spirit of the flames sprang hissing from the Fire. The soul of Sugar suddenly appeared as a funny man, in a long white and blue coat, with a very sweet smile. The Milk jug upset from the table with a crash, and a bashful white figure arose dripping from the floor. The lamp, too, fell over with a bang, and from the Light sprang up a maiden of dazzling beauty.

"Oh! Oh!" exclaimed Tyltyl and Mytyl.

"Don't be afraid," said the Fairy. "Those are only the souls of things, which most people are too stupid and too blind to see."

Suddenly a knock sounded again at the door.

"That's daddy!" exclaimed Tyltyl, alarmed. "He's heard us."

"Turn the diamond," commanded the Fairy. "Quick! from left to right!"

Tyltyl switched the cap from one side to the other, and the Fairy returned to an old woman once more; but he had turned the hat too quickly, and the souls of Fire, and Water, and Sugar, and Milk, and Bread, and Light, and the Dog and Cat did not have time to resume their natural shapes. A loud knocking was again heard at the door.

"Come! Let us go out of the window," said the Fairy, as if going out of windows were the most natural thing in the world. "You shall all come to my house. You Bread, take the cage in which to put the Blue Bird! Quick! Quick! Let's waste no time!"

And before they knew it she had whisked them all out of the window, and so it came about that on Christmas Night, while the bells rang out lustily, Tyltyl and Mytyl went in search of the Blue Bird that was to bring them happiness. The Fairy conducted them to her palace, where she gave Tyltyl and Mytyl and Bread and Sugar and the others beautiful new clothes to put on. Then she escorted the children to the threshold of the Land of Memory.

"You are going to visit your grandmother and grandfather," the Fairy told them. "You may find the Blue Bird there. You must go alone, but we shall all meet you when you come back."

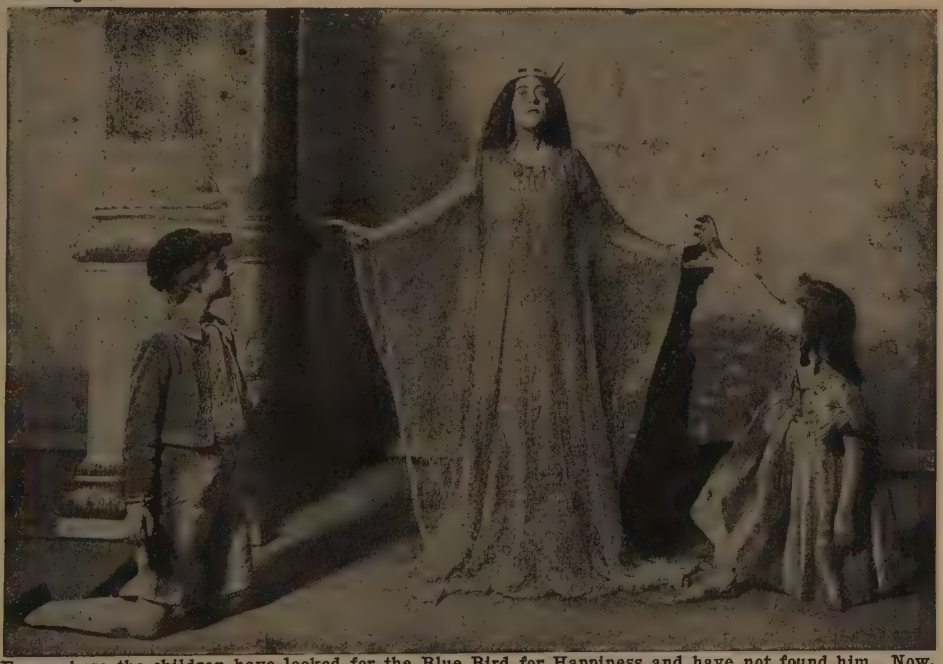
Then she left them. For a while the children walked on and on. Presently they could not see their way any farther, for a thick fog hung over all the land. At last they came to a large oak with a signboard nailed to it, and on the board were these words: "The Land of Memory." Suddenly Mytyl began to cry.

"Where are grandad and granny?" she sobbed.

"Behind the fog," returned Tyltyl bravely. "Come, don't cry. Look, the fog is lifting already, and we shall see what's behind it."

As Tyltyl spoke the mist began to dissolve. It grew thinner and thinner, until they saw before them in the woods a peasant's little cottage nestling away under the trees. A bird cage with a blackbird sleeping in it, his head folded under his wing, hung in the open window. A row of beehives stood near the cottage, but not a bee could be heard humming in the sunshine. Everything seemed asleep. Beside the cottage door on a bench sat

Here we see Tyltyl and Mytyl taking supper at their grandparents' home in the Land of Memory. Around the table are gathered all their little brothers and sisters who have died, and the blackbird hangs over the window. The bird seems blue to Tyltyl, so the children carry it back to Light, believing that it is the bird they seek, only to find, to their bitter disappointment, that it has turned black again.



Everywhere the children have looked for the Blue Bird for Happiness and have not found him. Now, at the end of their search, they are saying farewell to Light, who has guided them so faithfully on their journeys. She is telling them that, though she must go back into the Land of Silence, they will be able to see her always—in the morning sunshine, in the rays that float in through the window, in the soft glow of the evening lamp. The children would be sorrowful but for the comfort of her words.

an old man and an old woman, and their heads nodded up and down as they dozed.

"It's grandad and granny!" exclaimed Tyltyl wonderingly.

"Yes! Yes!" cried little Mytyl, clapping her hands with delight. "So it is! So it is!"

Presently they saw their grandmother slowly open her eyes, stretch herself and look at Grandfather Tyl, who was also waking up.

"I have a notion that our grand-children are coming to see us to-day," Tyltyl and Mytyl heard her say.

The children rushed out from behind the trees.

"Here we are! Grandad! Granny!" they shouted, jumping up and down. "Here we are!"

"For a few moments their grandfather and grandmother were so happy to see them that all they could do was to hug and kiss them delightedly.

"Why don't you come oftener to see us?" they asked. "It's months and months now that you've forgotten us and that we have seen nobody."

"We couldn't," Tyltyl explained. "And to-day, it's only because of the Fairy."

"The last time you came," said Granny, "was on All-hallows' E'en, when the church bells were ringing."

"But," exclaimed Tyltyl, much astonished, "we didn't go out that day!"

"No, but you thought of us," answered their grandmother, "and every time you think of us we wake up and see you again."

Presently Mytyl noticed the sleeping bird and exclaimed: "Why, here is our old blackbird! Does he still sing, Granny?"

As she spoke the bird woke up and began to sing.

"You see," said Granny triumphantly, "as soon as one thinks of him——"

"But the bird's blue, not black!" interrupted Tyltyl, in amazement. "He's blue as a blue glass marble. Grandad! Granny! May I have him to take back to the Fairy?"

"Certainly," said they, so Tyltyl put him in his cage, and after supper with their grandparents the children said good-bye.

"Don't cry, Granny dear," said Tyltyl, "we will come back as often as we can."

"Come back every day," said their grandmother wistfully. "It's our only pleasure to have your thoughts visit us."

"Yes, come often," added their grandfather. "We have no other amusements."

So with their precious cage tucked under Tyltyl's arm they set out, waving their handkerchiefs now and then to their dear old grandad and granny. As they walked the fog closed in about them and hid the cottage from their sight. But a great disappointment awaited them, for when they reached the palace of Light, they found that the bird in the cage was no longer blue. It had turned black. Light smiled when Tyltyl told her of his first failure.

"Do not be sad," she said. "Are you not pleased to have seen your grandparents? Is not that enough happiness for one day? Are you not glad, too, to have restored the old blackbird to life?"

Once more they set out in search for the Blue Bird, and this time the Fairy sent them to the Palace of Night, accompanied by Bread, Sugar and the Dog. They wandered on until they came to a wonderful hall lined with gold and ebony and shining black marble. On a great throne in the middle of the hall sat a woman clad in long, trailing, black robes, and in front of the throne sat the Cat. Now the Cat was anxious to prevent the children from finding the Blue Bird, and he had hurried ahead to warn Night that the children were coming. But the Cat was a great hypocrite, and as soon as he saw the children he rushed up to them in pretended delight.

"This way, little master, this way," he purred. "I have told Night you were coming, and she is delighted to see you."

Tyltyl explained his errand to the sombre figure on the throne.

"I have come to look for the Blue Bird," he said; "may I have the keys of your doors?"

"Have you the sign?" asked Night grudgingly.

Tyltyl touched his hat.

"Behold the Diamond," he said.

Night scowled blackly, but delivered the keys into his hands.

"Look to yourself if you meet with misfortune," said she.

One door after another, around the great black hall, Tyltyl unlocked. In one he found the Ghosts, in another the Wars, in another the Shades and Terrors, and in another the Perfumes of the

Night, in still another the Will-o'-the-Wisps and the Fireflies and the Stars. Behind one door he found the Sicknesses, and a little Cold-in-the-Head came hopping out, sneezing, coughing and blowing its nose, but in none could he find the Blue Bird. At last he turned to the great door behind the throne of Night. With warning, outstretched hands she blocked his path.

"Do not open that one," said Night terribly. "If you do you will surely be lost."

Whereupon Mytyl, who had been frightened by all the strange things she had seen, began to cry, and Bread flung himself on his knees before Tyltyl.

"Don't do it, master dear," he besought him with chattering teeth.

"You will sacrifice the lives of all of us," mewed the Cat.

"I must open the door," answered Tyltyl, rather frightened, but gathering his courage together. "Sugar and Bread, take Mytyl by the hand and run away with her."

So the others fled away as fast as they could, only Tylo, the Dog, half dead with fear, remaining faithfully by his master's side, muttering: "I shall stay, I shall stay! I am not afraid! I shall stay with my little god!"

With trembling fingers Tyltyl inserted the key in the great doors. At the first touch they slid softly aside. Tyltyl stood staring in utter bewilderment, for instead of the fearful cavern he had expected, a beautiful garden lay before him, shimmering in the moonshine. Flowers that shone like stars bloomed everywhere, waterfalls that came rushing from the sky made music in the air. And then there was something whirling like a blue cloud among the clusters of roses.

"Mytyl, Tylo!" shouted Tyltyl, half wild with excitement. "Come all. Help me! Thousands of Blue Birds. Millions! You can catch them by the handfuls."

The children rushed into the dazzling garden and came forth, their arms full of struggling Blue Birds, and hurried away as fast as they could to find the Fairy and tell her the good news. The Cat remained behind.

"Have they got the real Blue Bird?" questioned Night fearfully.

"No . . . I see him there, on that moonbeam," exulted the Cat. "They could not reach him! He kept too high."

In the meanwhile the children had met the spirit of Light.

"Have you caught the Blue Bird?" asked Light.

"Yes, yes," exclaimed Tyltyl eagerly. "As many as we want! Here they are!"

But as he held out the birds he suddenly saw that they were dangling limp and lifeless in his hands. He had only caught the moonbeam Blue Birds. The real one had escaped.

Still the children wandered on and on, until they received a note from Fairy Bérylune telling them to look for the Blue Bird of Happiness at midnight in the Churchyard; so one night when the moon was shining brightly on the grassy mounds and the wooden crosses on the graves, Tyltyl and Mytyl crept into the churchyard. Mytyl was frightened.

"I want to go away," she pleaded.

"Not now, little sister," said Tyltyl, mustering his failing courage. "I am going to turn the diamond and we'll see the souls of the dead."

"No! No! Don't," gasped Mytyl. "I am so frightened, brother!"

"There's no danger," Tyltyl reassured her.

"I—I don't want to see the dead," persisted Mytyl. "I don't want to see them."

"Very well, you shan't see them. Shut your eyes," returned Tyltyl, and he put up his hand to turn his cap. For a moment he, too, felt like closing his eyes. There was a pause of terrifying silence. Then slowly the crosses began to totter, the mounds opened.

"They're coming out," gasped Mytyl, cowering against Tyltyl.

Slowly, slowly, the slabs rose up—a tiny mist came from the ground. Then little by little green shoots pushed their heads through the sod, and a great full-blown rose spread on every grave. Mytyl opened her eyes and stared with dazzled eyes at their wonderful golden hearts.

"Where—where are the dead?" she whispered, trembling.

"There are no dead," exclaimed Tyltyl, awe-struck.

But the Blue Bird was not in the Churchyard. The children next sought the Blue Bird in the Kingdom of the Future. On and on they went until they

came to the blue Halls of the Azure Palace, where they found the children who were waiting to be born, hundreds of thousands of them—all dressed in long, blue, mist-like garments. Some were playing, others strolling to and fro, others talking or dreaming; many were asleep; many were working at future inventions; and everything about was blue, blue as the summer sky.

"Where are we?" asked Tyltyl.

"In the Kingdom of the Future," Light told them. "We shall probably find the Blue Bird here."

As Light spoke a crowd of little Blue Children began to gather about, their fingers in their mouths, their eyes wide as saucers.

"Live children! Come look at the little live children," they cried.

They brought all their inventions for the children to see.

"Look at my daisies," cried one, bending under the weight of a flower as big as a cartwheel. "They will grow like that when I am on earth."

"See my pears!" said another. "They will all be like that when I am thirty!"

One little child ran up and began to kiss Tyltyl and Mytyl.

"I shall be your brother," the child said. "I am coming to you next Palm Sunday."

"What have you got in that bag?" asked Tyltyl curiously.

"I bring three illnesses," the child replied. "Whooping-cough, scarlatina, measles."

"And after that?" queried Tyltyl.

"After that . . . I shall leave you."

"But it will hardly be worth while coming," exclaimed Tyltyl.

"We can't pick and choose," the little unborn soul replied.

Suddenly a loud swelling sound was heard through the Azure Hall. Two great opal doors on one side began to move.

"What is that?" asked Tyltyl.

"That's Time," replied the Child.

The great opal doors turned slowly on their hinges, and old Father Time appeared on the threshold. Behind him could be seen a boat, sails set ready for the sailing.

"Are they ready whose hour has now struck?" he called out very gruffly.

The Blue Children came hurrying, crowding from every side.

"Here we are! Here we are!" they shrilled.

"One at a time," said Father Time, as he hurried those who were to be born into the boat.

Light threw her gold cloak around Tyltyl and Mytyl, and dragged them to a corner of the hall from where they could see everything without being seen by anyone.

As the boat set sail the little Blue souls called out their farewells to the children who were going to be born.

"Good-bye, Pierre! Good-bye, Jean. . . . Try to know me again. . . . I shall find you. . . . Don't lose your ideas. . . . Don't lean too far into space."

Then the children's voices in the boat were heard faintly in the distance: "The Earth! The Earth! How beautiful it is!" Then a strange, wonderful swelling sound of gladness arose.

"What is that?" whispered Tyltyl.

"It is the song of the mothers coming out to meet them," said Light.

Mytyl and Tyltyl listened, and longed for their own mother.

Meanwhile Time had come back to close the opal doors. Suddenly he caught sight of the children, and he advanced upon them furiously.

"Hurry!" said Light. "Hurry! Take the Blue Bird, Tyltyl, and go in front." She put into his arms a gorgeous Blue Bird. Just as they were crossing the threshold of the palace, Time, with a roar of rage, darted his scythe at Tyltyl. The boy, who was very much taken by surprise, opened his arms and the Bird soared away.

And thus it came to pass that the children could not find the Blue Bird of Happiness. Everywhere they looked for him, but nowhere could he be found. At last one day they woke up to find themselves back in their own little beds at home in the cottage, and there in their own home they found the Blue Bird of Happiness for which they had spent their time searching everywhere else in vain.

And this is just the case with most of us—we are on the look-out for happiness everywhere, in all the out-of-the-way places possible, when, if we but knew, it is waiting for us in all the simple joys and duties of our own homes.

THE NEXT STORIES ARE ON PAGE 5193.

Photo, courtesy Doubleday, Page & Co.
The Onslaught, by Dr. R. Tait Mackenzie.

THE SCULPTORS OF CANADA

THOUGH Canada has not a long list of sculptors, she may be proud indeed of the work of some of her sculptor sons. In 1885 there came from England Hamilton P. MacCarthy, who already in Europe had had the patronage of Queen Victoria and the King of the Belgians. A number of portrait busts and monuments—Champlain, at St. John, New Brunswick; Sir John A. Macdonald, in Queens Park, Toronto; and others—give proof of his activity and skill in his later home. He founded the Gallery of Sculpture of Ontario, and in 1891 was elected Royal Canadian Artist. If you have stood in Dominion Square, Montreal, and looked up at the spirited group on the memorial monument for the Strathcona Horse in the South African War, you must remember that it is the work of George William Hill, whose father was a marble-dealer in old Quebec. The son, urged by a strong desire to carve and mold figures, went to Paris to study. Later he lived and worked in Montreal.

Louis Philippe Hébert, the eminent French Canadian, was born in 1850 at Sainte Sophie d' Halifax, Quebec. The boy loved to roam in the woods and to carve figures out of wood. Listening to his father reading, in the evenings, the romantic adventures in the Jesuit Relations, he pictured the scenes to himself and fashioned rough carvings to represent Indians and explorers. As a young man he went to Italy to fight in the army against Garibaldi. At Rome for the first time he saw great art. Deeply impressed, he went on with his carving and received encouraging praise. Back in America, he at last began studying under Napoleon Bourassa. Then, after additional study in Paris, he was given commissions by the Government of the Dominion. Of his many patriotic statues, Maisonneuve, in the Place d'Armes, Montreal, of which you will find a picture in an earlier volume, is perhaps the best. Hébert died in 1917, but three years later there was unveiled in Grand Pré Memorial Park a fine statue of Evangeline, made after a model designed by the old sculptor and executed by his son, Henri Hébert.

Alexander Phimister Proctor, when he was a boy, gave most eager attention to learning about wild beasts—watching them, studying them, sketching them, whittling figures of them. There is a story that one day, "with no other assistance than a stout heart and a more or less trusty gun of antique pattern," he killed an elk and a grizzly bear. But when he killed an animal,

Photo, courtesy The Metropolitan Museum of Art.
The Supple Juggler, by Tait Mackenzie.

his first object was to study its anatomy. So he has gone on, being by turns hunter, naturalist and sculptor, until to-day he is probably the most distinguished of American animal-sculptors. Lions on the McKinley Memorial at Buffalo, tigers at Princeton University, New Jersey, and bison on a bridge at Washington, D. C., are a few of the monumental figures of his handiwork. In these and in stirring small bronzes of wild animals or of Indians in rapid motion on horseback, the sculptor shows an intimate knowledge of wild life. He gives not only the impression of bone and sinew and rippling skin or furry hide, but the very feeling that animates the creature.

Born in Ontario in 1862, Proctor went as a lad to live in Denver, Colorado, and later made his home in New York. He has spent much time in the mountains of Colorado, among the Rockies, and on the plains of Alberta.

A SCULPTOR OF ATHLETIC YOUTH

In all the world's history no others have equaled the Greeks in making statues of exquisitely formed athletic youths. But the nearest approach to their work is being reached at this very time by Dr. R. Tait Mackenzie, physician, director of physical education, and sculptor. Born in Ontario in 1867, he studied at McGill University, and by 1892 had received the degree of Doctor of Medicine. While working during vacations to help pay college expenses, and in college sports, the lad gave proof of skill and interest in all forms of athletic training. By 1895 he had become house physician to the Earl of Aberdeen, who was then governor-general. In 1904 he left a profitable practice in Montreal to become Professor and Director of Physical Education at the University of Pennsylvania, in Philadelphia. There he has had before him fine types of athletic young manhood, although he has devoted his attention even more to the development of the weaker youths so as to raise the average. All his life eager to express himself in drawing or painting, he has been able at last, in the midst of a busy career, to discover in himself a sculptor

Photo, courtesy Royal Canadian Academy of Arts.
Le Défricheur, by Alfred Laliberté.

A BEAUTIFUL NATIONAL MONUMENT

Photo, courtesy the Gorham Company.

This is the crowning figure of the South African Memorial by Walter S. Allward. At the base of the shaft is a fine group showing Canada pointing the way for two of her stalwart young soldiers.

of rare gift. Beginning with a figure of a sprinter whose proportions were worked out from the averaged measurements of nearly a hundred sprinters, he has made statue after statue of youthful athletes, beautiful in form and expressing the full "joy of effort." A boy scout, a runner in a relay race, a boxer, a shot-putter both before and after the sphere has left his hand, a team of football-players massed for an onslaught, are some of his subjects. Whether looked upon as studies in anatomy or as charming sculptured figures embodying the vigor and beauty of youth, they are satisfying. Dr. Mackenzie's war work as major in the Royal Army Medical Corps, done in England, was for the restoration of the disabled to whatever degree of physical fitness might be reached. He has made some interesting memorial portrait statues of young men of England, Canada and the United States, heroes in the World War.

The Old Pioneer, by Aurèle Suzor-Coté.

ABLE SCULPTORS OF CANADIAN LIFE

The career of Walter S. Allward, a native of Toronto, while not far advanced, is already brilliant, not only with promise but with considerable achievement. His first important commission was for a statue to commemorate the Northwest Rebellion. Since then a number of remarkable monuments and portrait statues have followed; for example, the Baldwin-Lafontaine group on Parliament Hill, Ottawa; the unusual half-length figure of an old soldier in Portland Square, and the splendid South African Memorial on University Avenue, Toronto; and the impressive memorial of Alexander Graham Bell's invention of "electric speech" at Brantford, Ontario, a picture of which you may find on page 6245. For the Canadian Battlefields Memorials Commission Allward has modeled a very fine monument which is being erected on Vimy Ridge. It takes the form of a great wall of defense, surmounted by a heroic figure which symbolizes Canada brooding over the graves of her dead. Other figures, representing the Defenders, Peace, Justice, Truth, Knowledge and the Spirit of Sacrifice, are placed against the "rampart" at various levels. The power of genius is unmistakably present in the noble and expressive lines and masses of this young sculptor's creations.

We should remember Aurèle De Foy Suzor-Coté as both painter and sculptor. His small figures and groups of French Canadians faithfully depict the life of a calm, sturdy, home-loving race. Alfred Laliberté, of Quebec, whose whole life has been one of devotion to sculpture, has produced groups and busts of admirable vigor, like the Dollard des Ormeaux group in Montreal.

Two young women, Frances Loring, of Idaho, and Florence Wyle, of Illinois, leaving the United States to live in Canada, settled in Toronto, where they have done some very interesting work, including a number of bronze statuettes commemorating the home work of Canada in the war—men and women laborers of the land army or in munition factories. Miss Wyle has executed a very fine bronze memorial of Edith Cavell which has recently been placed in front of the Toronto General Hospital. The work of both these sculptors attracted considerable attention in the Canadian section at the Wembley Exhibition in 1925. Miss Loring's Grief, conceived

Grief, by Frances Loring.

as a result of the tragedy of the World War, is a large bronze superbly modeled and cast with great strength of feeling. Miss Wyle's Girl with Grapes was designed for a fountain, and is a beautifully proportioned piece of work.

How all of us may help our national art

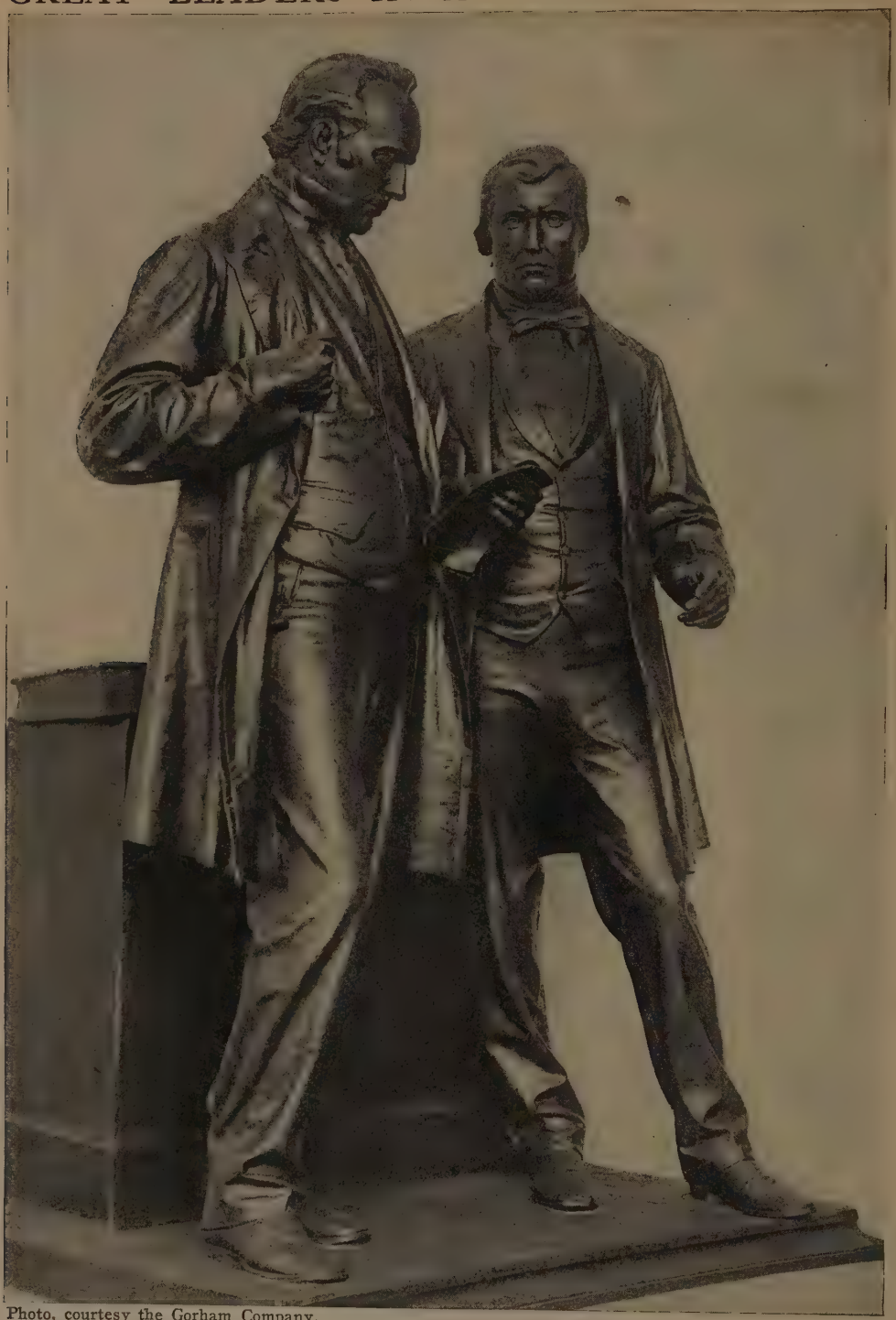
In these pages you can, I am sure, find proof that Canadian art, while as yet very young, presents much that is beautiful and interesting. A great national art, like the Italian, the Spanish or the Dutch, for instance, has not come about because a people said, "Now we will produce an art that is purely our own." It is always, rather, a growth that comes naturally, but slowly, with the passing years. In Canada, with its rare natural beauty and sublime grandeur, we may surely expect that the future is to be big and splendid, on a scale to measure up to the country itself. But we must bear in mind that such growth takes time, and depends, not only upon the artists, but upon all the people who take part in the national life. You and I, wherever we may be, if we are thoughtful and intelligent and appreciative of all good things, may have a part in raising the standards of our national being. So, whether we have any gift for expression in art or not, we may count among the makers of art—be "masters by proxy," as one writer expresses it.

And now let us think for a minute what is meant by great art. It is art that expresses something that belongs, not simply to one place or one time, but something that is as long as all time and as wide as the world is wide. The things shown in a picture or a piece of sculpture may be actual objects to be seen here and now, but a true artist can help us to see in them what is universally and eternally true and beautiful.

We may be sure, too, that there will always be great artists, for from the beginning of human thought there have always been some human beings born with a deep, mysterious force that will not be satisfied until it has found expression in line or color or form.

THE NEXT STORY OF THE FINE ARTS IS ON PAGE 5207.

Girl with Grapes, by Florence Wyle.
Photos, Pringle & Booth, Toronto.



Photo, courtesy the Gorham Company.

Robert Baldwin and Louis (afterward Sir Louis) Lafontaine were two wise statesmen who helped to win responsible government for Canada. In 1848 Lord Elgin, the governor-general, asked them to form a ministry. This group, by the sculptor Walter S. Allward, stands on Parliament Hill, Ottawa.

WHY DOES A BOOMERANG COME BACK?

SOME people suppose that the boomerang comes back after hitting what it is aimed at. That would really be very convenient when the instrument is used in the chase, but it does not happen. What happens is this.

The first part of the boomerang's path is straight, or practically straight. It is expected to hit its object while it is in this part of its path. If the boomerang were flying through nothing, it would have to fly *always* in a straight line, according to Newton's great law of motion.

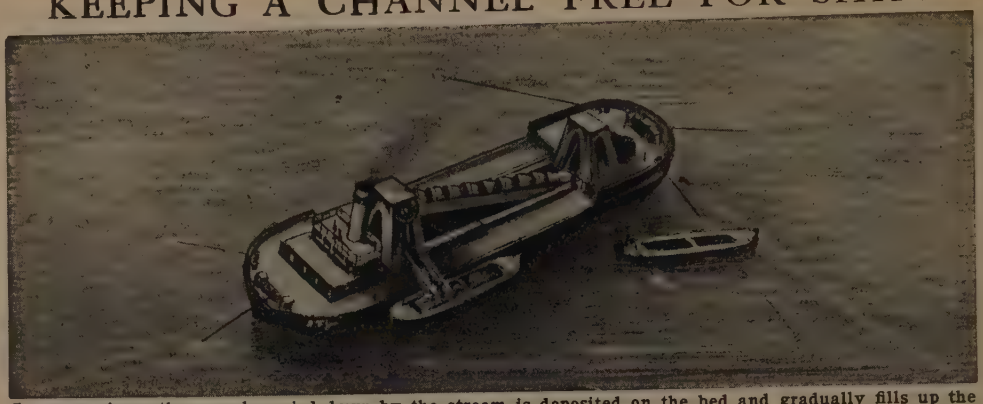
But the boomerang is flying through air, and it is so shaped that the air resists one part of it more than another, so that it has to travel in a curved path after its speed has slowed down below a certain rate. As it travels in a curve, it *more or less* comes back to the place it started from.

Endless study has been devoted to finding why the boomerang must be its exact shape, what are the consequences if its shape is a little different, what is the speed at which it begins to curve, how its weight and size affect the curve, and what is the relation between the curves of the boomerang itself and the size of the curve it makes in the air. But these questions are immensely difficult, and still undecided. If the boomerang, instead of being *gradually* slowed down, is arrested entirely in its flight, it simply drops "dead," as we say.

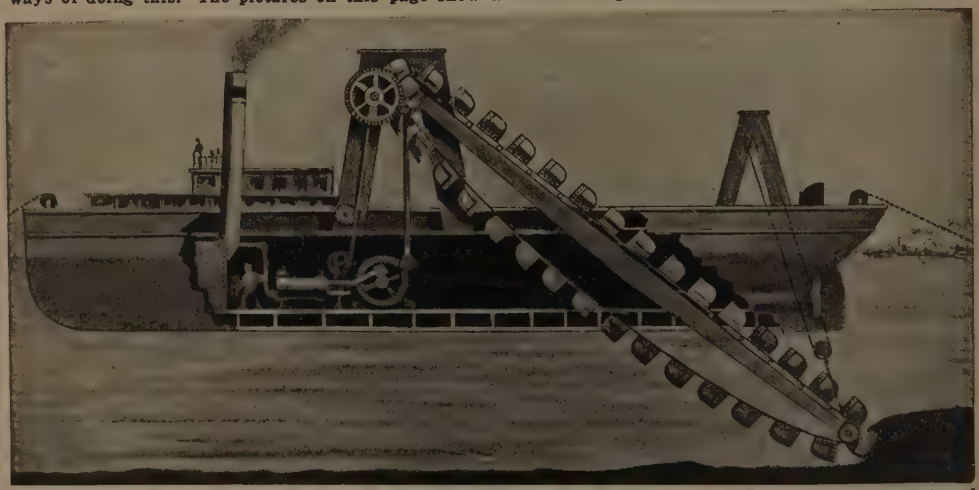
The stories about Australian aborigines' being able to throw a boomerang so it will kill an enemy hiding behind a tree and then return to the sender, or of a native throwing the boomerang with his back to the object he wishes to hit, are mere Old World fables. It is true, however, that an Australian native who is an expert thrower can cause a boomerang to pass behind him after a short preliminary flight in front.

There are various forms of the boomerang: heavy throwing sticks for fighting at close quarters, and lighter ones for hurling at game at a distance. The boomerangs that return to the thrower—the kind best known to us by repute—are often called play boomerangs; and the Australian aborigines practice throwing these to show their skill. Such boomerangs always consist of a flattened curved blade, usually quite flat on one side and slightly convex on the other, and the power of returning seems to be associated with a very slight twist in the weapon. A skillful thrower can make a boomerang describe first a large circle and then one or two smaller circles before it falls at his feet. These return boomerangs, contrary to general belief, are found only in very restricted areas of the great island continent.

KEEPING A CHANNEL FREE FOR SHIPS



In many rivers the gravel carried down by the stream is deposited on the bed and gradually fills up the channel. In order to keep a way open for ships this has to be constantly dredged, and there are various ways of doing this. The pictures on this page show a bucket-dredger at work, moored in the stream.



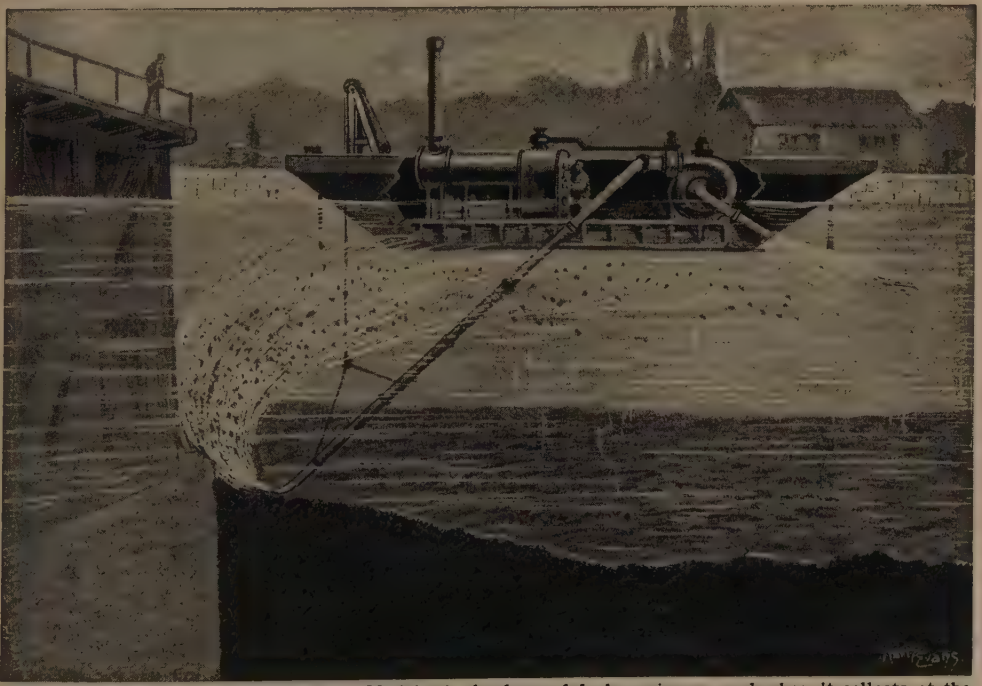
In this picture, which shows a section through the dredger and river, we see how an endless chain of buckets worked by an engine on the dredger constantly moves round and round, the buckets scooping up the gravel from the river-bed and emptying it into a barge lying alongside.

Some dredger-buckets like these are enormous. Each brings up over two tons of matter at a scoop.

This picture shows how the big buckets pass over the wheel, round which the endless chain works.

HOW A HYDRAULIC DREDGER WORKS

This drawing shows how a hydraulic suction dredger works to remove fine mud and sand from the bottom of a river. It is really a huge centrifugal pump, sucking the mud up with a large proportion of water. This is emptied into hoppers, the water running off as the hoppers fill up with solid matter.



Here we see another form of dredger. Mud is the bugbear of dock engineers, and when it collects at the entrance to a dock, it is sometimes washed away by a powerful water-jet, worked by a pumping engine. The great force of the jet stirs up the mud, and the current carries it away, as we see here.

HOW MANY OCEANS ARE THERE?

There is really only one ocean and it covers between two-thirds and three-quarters of the earth's surface. However the continents divide it into three great parts, the Pacific, the Atlantic and the Indian Oceans, and we generally mean one of these when we use the word ocean.

These three oceans flow together around the South Pole, and sometimes that part is called the Antarctic Ocean. The Atlantic and Pacific are also often divided into northern and southern sections. Finally, the enclosed sea around the North Pole is often called the Arctic Ocean. Many geography books give all these seven different oceans, and we often call them "the seven seas."

The greatest depth yet found in the oceans is more than 34,000 feet, but if the oceans were everywhere of the same depth it would be about 12,500 feet. The Greeks thought that the ocean was a great river which flowed around the entire world, then believed to be flat. In fact, it is from their name for this river that our word "ocean" comes.

WHY IS A RUNNING STREAM PURER THAN A STAGNANT POOL?

Though we think of water as a thing which does not do much, it is always doing things. It is the great supporter of life; it is the great dissolver of gases and solids from the air above it and from the ground beneath it, and these gases and solids help to support life. Stagnant water very quickly becomes filled with living creatures and with the products of their lives. We call it impure simply because that does not happen to be the kind of water we prefer to drink. But really, though we give it a bad name, it is doing the great work of water on the earth.

Even the water we call pure contains a great number of other things in it besides water, and that is especially true of running water, which is rich in gases and often contains minerals also. It is probably not very long since running water existed in the form of rain, which is much the purest of all the water's natural forms, although it contains a certain amount of dust and a certain quantity of the gases in the air dissolved in it.

The gases in running water make it pleasant to taste, and this makes a great difference. The Chinese long ago said that the proper way to make tea was with water from a running stream. If we compared such tea with tea made from pure distilled water, we should think the distilled water was a very poor drink indeed.

WHY ARE SOME PLANTS POISONOUS?

When we say a thing is poisonous we mean that it is poisonous to us. Some things which are poisonous to us are poisonous to all living creatures, but most things are poisonous to some creatures and not to others; indeed they may be very good for the others, just as when we say "one man's meat is another man's poison."

So long as we have the old idea that every living creature exists for our benefit it is indeed a puzzle why some plants should be poisonous, why some snakes should be poisonous, why there should be disease-causing microbes, and why tigers should have claws. But if we believe that every living creature exists for its own sake, then we shall look at the claws of the tiger, or the poison of the snake or plant, and ask, How do they serve the life of the creature that has them?

We are only now beginning to learn the meaning and the uses of the various chemical compounds, poisons and others, which we find in plants. Some of them seem to be waste products that the plant is gradually getting rid of; or sometimes the poisons of a plant exist to warn off insects or other forms of life which would injure the plant.

WHAT IS A WILL-O'-THE-WISP?

In marshes and lowlands strange lights are occasionally seen after sundown. Pale bluish flames of various sizes and shapes appear over the ground. Sometimes they stay where they are all night. At other times they flit about or come and go at regular intervals.

People have always had superstitions about these lights. They were believed to be caused by goblins, to lead travelers off the road. "Will-o'-the-wisp" and "Jack-o'-lantern" are two of the names by which they are known. The Latin name is *ignis fatuus*, "foolish fire."

It is generally thought that the Will-o'-the-wisp is caused by the action of gases arising from the rotting of plant or animal matter. But as few scientists have ever succeeded in finding and studying the lights, there is still something of a mystery about the whole thing.

IS IT TRUE THAT CHILDREN WILL RULE THE WORLD?

It is true that the children of to-day will rule the world to-morrow. There is nothing we know better than that all men and women, kings and beggars, great and small, began as helpless babies, more helpless than any other kind of living creature. All individuals are mortal, and the destiny of the world, the ruling and the being ruled, is all in the hands of the children. Those who rule to-day were the children of yesterday.

That is the law of human life. It means that "a mother is the holiest thing alive"; that history is made in the nursery; that the bringing-up of children is the noblest, the purest and the most necessary work in the world. And it is the most difficult, just because the human being is so wonderful and complicated in the nature of his mind and his body.

WHY DOES A THING GO YELLOW WITH AGE?

This is a question of the production of a particular coloring matter, or pigment—in this case, a yellow pigment. As a matter of fact, not everything goes yellow with age. For instance, old silver is not yellow, which points to the fact that whether the article becomes yellow or not depends on what it is made of.

In the case of a leaf which turns yellow in the autumn, these coloring matters are produced by a chemical change. The green coloring matter splits up after a long time into others, of which yellow is one. So most things which become yellow as they get old are yellow because of the production of a yellow pigment from some of the substances contained in them. These things are generally found to be composed of vegetable matter.

DO WE GROW AS MUCH ONE YEAR AS ANOTHER?

No. For one thing, whenever we have an illness our growth is affected—usually it is lessened, but sometimes it may be increased. But even if we have no illness, and live even lives from year to year, our rate of growth varies.

Both boys and girls, but especially boys, grow much more from about fourteen to seventeen than at other times. Growth in height depends almost entirely on the lengthening of the bones of the legs; and it is the differences in the length of the legs that makes the difference in height. That is why we cannot tell how much people differ in height when they are all sitting down. The bones of the legs grow in length by the making of new bone at certain places near their ends. After about the age of eighteen most of these places stop working, and only those which are left can add to our height. Some do not grow much after eighteen. A few years later the rest of these places stop working, and the whole length of the bone becomes finally fixed. Some grow more slowly after seventeen or eighteen, but continue to grow for several years.

WHAT HAS HAPPENED TO THE SNAILS FROM ALL THE EMPTY SHELLS?

We may sometimes find along the seashore the white bones of a bird or some other animal, and, if so, we may ask why do we not find the dead bird, but only its bones? Perhaps we may say at once that it was because the bones of the bird were harder than the rest of it, and lasted after all the soft flesh and muscle and everything else had decayed and disappeared. So in the case of the snail. When the snail dies, its soft body is easily broken up into many chemical substances, and all the moisture in it evaporates, and all that is left is the hard shell. So that the answer to the question is simply that the harder a thing is, the longer it will last, whether it happens to be the shell of a snail or the bones of another animal.

WHY DOES WOOD WARP IN DAMP WEATHER?

As long as a piece of wood is alive it contains a certain amount of moisture, and this moisture is in the fibres, which we may think of as a number of small tubes packed side by side. These fibres shrink or swell according to the amount of moisture they contain. When the tree is cut down and made into timber, a great deal of moisture is let out and evaporated, and if the wood is quite dry, it will retain its shape as long as it is so.

It is one of the difficulties in drying planks to get both sides equally dry; and we have noticed that if we place a piece of damp wood near the fire, or if we wet one side of a piece of dry wood and hold it near the fire, the wood very soon begins to curl, owing to one side's contracting and drawing the other side round with it. The shrinking and swelling, according to the amount of moisture present, takes place only across the grain of the wood, leaving its length entirely unaffected by the moisture.

WHY DO WE NOT GROWL LIKE AN ANIMAL WHEN WE ARE HUNGRY?

It is certain that human beings and animals feel very much the same when they are hungry. An old saying is that "a hungry man is an angry man." The rule is that, among ourselves and animals, anger is apt to be aroused whenever there is any interference with the most important things on which life depends.

Many years ago Darwin showed how animals and men express their feelings in much the same way. But man has the power of speech and this makes a great difference. So, instead of growling when he is hungry and angry, he speaks, often showing his bad temper by the words he chooses and his tone of voice. Perhaps someone will then say to him, "Well, don't growl about it," showing that his words just mean a growl, and are really the same thing. If speech is impossible, then even human beings may growl when they are hungry, as babies cry when they are hungry.

WHY DO WE WEAR LIGHT THINGS IN SUMMER AND DARK IN WINTER?

We call clothes warm or cool according to whether they let the heat escape with ease or with difficulty from our bodies. This depends partly on the weight of the clothing, partly on its material and partly on its texture. But there is another way in which clothes may affect our temperature, quite apart from the question of how good or bad a conductor of heat they are. White clothes will be cooler than if we have them dyed black.

If we are to explain this, we must know what causes blackness and whiteness. A thing is white because it returns to our eyes the whole, or nearly the whole, of the white light that falls upon it. To a great extent it treats the rays of radiant heat that go with the light, and are really part of it, in the same way. But if it returns these things, they will do little to it. Now, a black thing absorbs the light that falls on it. Black is not a color, but the absence of color, and a black thing is black because it does not send back from its surface the light that falls on it. On the contrary, it absorbs this light, and also a great deal of the heat.

The light that is absorbed disappears, but nothing is ever lost, and we must ask what becomes of it. The answer is that it is turned into heat—it is used up in warming the black coat that absorbs it. Thus in two ways the black thing is heated, and that is why we find it better to wear in winter, while in summer we choose what will send back the heat and light.

DO WE GET A POUND OF ICE FROM A POUND OF WATER?

When we use such a word as pound we are concerning ourselves with the notion of weight; that is a different thing from mass, of course. The mass of a thing is the amount of stuff in it, and is just the same whether a thing is on the sun or the moon or the earth, though its weight would be very different in those three cases.

Now, if we take a pound of water and turn it into ice, the mass of it will remain the same. We allow nothing to run away and we add nothing to it, so we have there the stuff which we had before, and nothing but the stuff; and the only question is, Does it weigh the same when frozen as when it was liquid? That, in other words, is the question asked here.

The answer is that most careful experiments have been made on this very point, and they all go to show that gravitation is not affected by any change of temperature. The amount of stuff which weighed a pound when liquid weighs exactly the same when frozen solid. If, however, instead of asking this question about weight, we had asked one concerning volume, or size, the answer would have been quite different. For instance, we do not get a quart of ice from a quart of water, because the water expands as it is frozen to form ice; and so we actually get more than a quart of ice from a quart of water.

DO DISEASES EVER DISAPPEAR?

Yes, indeed they do. There was a time when Europe was cursed with a very terrible disease which has its real home in China, and is called plague. Now there is little plague in Europe, though it would soon come back if a careful watch were not kept for it at every port. There was once leprosy all over Europe, and the poor lepers were imprisoned in special places. There is now little leprosy in Europe, and has not been for many years, except for a few people who have got it abroad and have come to live in Europe. Smallpox, too, has almost disappeared in many countries, thanks to sanitation and vaccination.

HOW DOES THE SEED MAKE THE COLORS OF A PLANT?

Things called ferments, which may be described as tiny chemists, are probably produced in the seed, and make compounds impossible to be made in any other way. The right ferment starts the right process going in each part of the plant, and the end of these changes is the production of a green, a blue, a red or a white chemical compound.

This happens because it is the nature of the plant. But without nurture the nature of no living thing can realize itself; and the nurture required by the plant when it is developing is much the same as that which it requires when it is grown up; that is, water, salts, light and air. Light is necessary because light is power, and every chemist, even the ferment in a plant, requires power to work with. That is why the plant produces early green leaves long before the bud, so as to be able to catch the rays of sunlight and use them to make the colors of the bud and the very substance of the bud itself.

WHAT IS A PASSION PLAY?

In the early years of the Christian Church, dramatic spectacles were often given, commemorating events in the life of Christ. Those that were concerned chiefly with His last forty days on earth, when He fasted and prayed in the desert, and was betrayed, condemned and crucified were called Passion Plays; and gradually these came to be a regular feature of the season of Lent. The word Passion comes from the Latin word meaning to suffer. In the Middle Ages, townspeople took charge of the Passion Plays and a great many cities and villages, especially in Germany, gave elaborate plays in which it was a civic honor to have a part. Gradually, however, the custom declined, until now there are only a few in Europe, America and Mexico.

The most famous of the Passion Plays to-day is the one at Oberammergau, in Bavaria, dating from 1633, when the people of Ammergau in the Alps vowed to produce the play once every ten years, if they should be relieved of the black death. The plague was abated, and the pious descendants of the villagers have continued the play, with only one interruption in three hundred years. That was in 1920, immediately after the World War.

The performances at Oberammergau are given in a large open-air theatre and last for seven or eight hours. There are nearly 700 actors, all villagers; and in some cases the chief parts have been hereditary. Only a man of blameless life is permitted to have the role of Christ.

The story is that of the New Testament, interspersed with scenes from the Old. The words are in fine dignified prose, and there is a musical score of classic beauty. Thousands of people visit the village of Oberammergau during the years when the Passion Play is presented; and they carry away with them the memory of a tragic yet thrilling performance, staged with genius and acted with reverent restraint.

WHY WILL PEN AND INK WRITE ON PAPER BETTER THAN ON A SLATE?

The principle of writing with a pen and ink is different from that of writing with a pencil, because here we are using a fluid, and what we want is a surface which will absorb a small quantity of the fluid as we write, but not too much of it. Writing-paper does this very well; blotting-paper is too highly absorbent, and so does not allow us to write clearly. But a slate and a surface of glass are not absorbent at all, and, as a rule, the ink runs very slowly from the pen because there is nothing to draw it, and it is held by the pen almost as well as if we were just hanging the pen in the air. But paper is full of tiny pores, and these draw the ink out of the pen in just the same way as a sponge will suck up water.

WHY DOES A MATCH FLARE UP WHEN TURNED UPSIDE DOWN?

We can find the key to this question if we remember what happens when a match is burning. It is burning because the materials in the match are combining with the oxygen of the air, and it will go on burning while there is anything to burn.

In the case of a wooden match held upright, the flame often goes out because it is starved of fuel. This is less likely to happen in the case of a wax match because the burnable part of a wax match is largely made of materials which we call *volatile*. This means that they turn into gases and rise when they are heated. But in a wooden match there is not nearly so much of this material, and so it often goes out; but if we turn it upside down, the flame finds an abundance of material on which to feed.

THE NEXT WONDER QUESTIONS ARE ON PAGE 5217.

MEN WHO REACHED THE SOUTH POLE

Captain Amundsen testing his position at the South Pole.

Amundsen's companion, Oscar Wisting, at the South Pole with his dogs.

Captain Oates walks out into the blizzard—From the painting, A Very Gallant Gentleman, by J. C. Dollman. Picture, courtesy of Thomas Forman & Son, of Nottingham, owners of the copyright.

Sir Douglas Mawson.

A. de Gerlache.

Roald Amundsen.

Admiral d'Urville.

Captain Scott.

James Weddell.

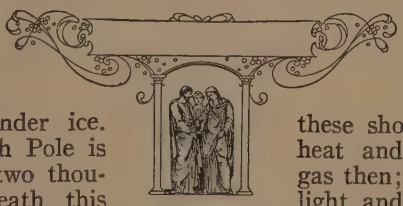
Sir E. Shackleton.

F. von Bellingshausen.

Charles Wilkes.

C. E. Borchgrevink.

THE SOUTH POLE MEN



ANTARCTICA, as we call the continent in the region of the South Pole, lies entirely under ice. The site of the South Pole is from a thousand to two thousand feet deep beneath this frigid mail. And of the 14,000 miles of continental coast only 4,000 miles are free from ice, which in places forms enormous unbroken cliffs facing the sea, hundreds of feet high. Amid this scene of eternal cold, as we think of it, great mountains throw up their heads. Some of them, such as Erebus and Terror, are active volcanoes, living furnaces covered with ice and snow.

The knowledge we have of this part of the earth is the result of more than a century and a half of desperate endeavor. The ancient Greeks dreamed of a temperate continent there. Even at the end of the eighteenth century men still believed in its existence. Antarctica is a continent, a land mass as big as Europe and Australia put together. And it was once the fair land of the voyager's vision. Though a considerable portion of it is yet untrod by man, several seams of coal have been found on the mainland, proving the existence of luxurious forests and blazing sunshine in ages long ago.

We may some day draw coal for heat from this land of fearful frost and paralyzing blizzard. In fact, the reason which urged the commercial pioneers into the seas that wash these shores was the need for heat and light. We had no gas then; oil was the source of light, and seals and whales were the source of oil. So it was Southward ho! that men went, on dreadful voyages of hardship, sickness and peril. The search for the South Pole is not traced into the dim distant centuries. Indeed, when in 1487 Bartholomew Diaz sailed round the Cape of Good Hope, and when Drake, almost a hundred years later, sailed round Cape Horn, hardly anyone in the world gave a thought to the lands farther south. Before that geographers had believed that Tierra del Fuego (the Land of Fire) south of the Strait of Magellan was connected directly with the New Guinea coast. But Drake's voyage made men think that there must be a great southland or Third World somewhere in the unknown regions of the South Pole.

French, Dutch and English explorers did try to find out something definite about the mysterious regions, but it was not until 1773 that the Antarctic Circle was crossed. Captain James Cook, sent out by the British admiralty, was the man who crossed the line and became famous. Following in Cook's tracks, Fabian von Bellingshausen was sent out by Alexander I

of Russia to explore the Antarctic Seas. He, too, crossed the Circle. But it was the whalers and sealers who more and more pieced together knowledge of the Far South. They discovered South Georgia, the South Shetlands, and other islands, all of which were believed at the time to be actual mainland.

Many of these sea hunters were fine spirits, touched by a sense of the romance and mystery of their calling. They added genuine exploration to the hard and hazardous chase of oil-charged sea animals. Such men were John Biscoe and James Weddell, typical whaling captains, who, in turn, reached the Antarctic in their tough little cockle-shell ships.

Then there were men like the Enderby brothers, whose name lives on the map. These men always hoped that if the voyages of exploration they promoted were commercially unprofitable, some new island, some archipelago, even the legendary continent itself, might turn up to justify the risk. It was the old merchant-adventurer spirit of the days of Elizabeth surviving into the nineteenth century.

THE ANTARCTIC VOYAGE OF A ROUND-THE-WORLD TRAVELER

Captain von Bellingshausen, who sailed round the world in 1803, led a Russian expedition to the Antarctic. From 1819 to 1821 he got as far as 70° South Latitude, where he discovered and named Peter I Island and Alexander I Land. Minutely acquainted with Cook's work, he added to it, and confirmed the impression that south of latitude 60 there was continuous open sea surrounding the ice-pack which girdles the frozen continent.

Weddell reached beyond 74° South Latitude and discovered the great bay which now bears his name. Biscoe named Enderby Land and found Graham Land, Adelaide Island and Biscoe Islands. John Balleny, another captain sent out by the Enderby brothers, reached what we now call Balleny Islands. Then came the French naval officer D'Urville, with his three years' voyage; and close on his heels followed the American Wilkes, and Ross. D'Urville's name is commemorated in that of the D'Urville Sea; and it is to him, by the way, that the world owes the discovery and preservation of the famous statue of the Venus of Milo, which he found in the Island of Melos in 1820. D'Urville also gave names to Joinville Island and Louis Philippe Land.

EXPLORERS OF DIFFERENT NATIONS CROSS EACH OTHER'S TRACKS

The three expeditions, French, American and English, were in progress at the same time, crossing each other's tracks. Charles Wilkes surveyed, as far as possible, the coast of Wilkes Land, which has a northern limit beyond the Antarctic Circle. It also embraces Adélie Land, which D'Urville had already reached and named.

Wilkes was unfortunate in his ships and in his relations with his officers and crew, who alleged that he was inhumane. He was brought to court-martial on these charges and was justly acquitted.

A greater figure of his time was Sir James Clark Ross, whom we have already met in the Far North discovering the North Magnetic Pole. The British Admiralty sent him in 1839 to discover the South Magnetic Pole. In the course of the greatest cruise then accomplished, in and through the ice, he enormously advanced our knowledge.

With his two little ships, the Erebus and the Terror, he battled with floes and bergs, with unknown tides and desperate winds. He sailed straight for the Magnetic Pole till land stopped him at what we now call Cape Adare, where he espied a mountain rearing its icy head ten thousand feet into the skies. This he named Mount Sabine, after a brilliant scientist of the day.

FLAMING VOLCANOES WRAPPED IN COATS OF ICE

The Ross Sea marks another of his discoveries. Others were the Admiralty Range, Possession and Coulman Islands, and two flaming volcanoes, which he named, after his ships, Mount Erebus and Mount Terror. East of a cape which he named Crozier, after his second in command, Ross surveyed a great stretch of the ramparts of the land, the famous Great Ice Barrier. He found and named South Victoria Land as well. Then, after thrilling adventures, he came back, the first man to take a ship beyond 75° South Latitude.

The next ship in the Antarctic Circle was the steamship Challenger, under the command of Captain Nares, in 1874, when the Great White Silence had been left unvisited for thirty years. After that a further twenty-one years passed before a second steamer appeared in the same region. But it was the frisky little sailing

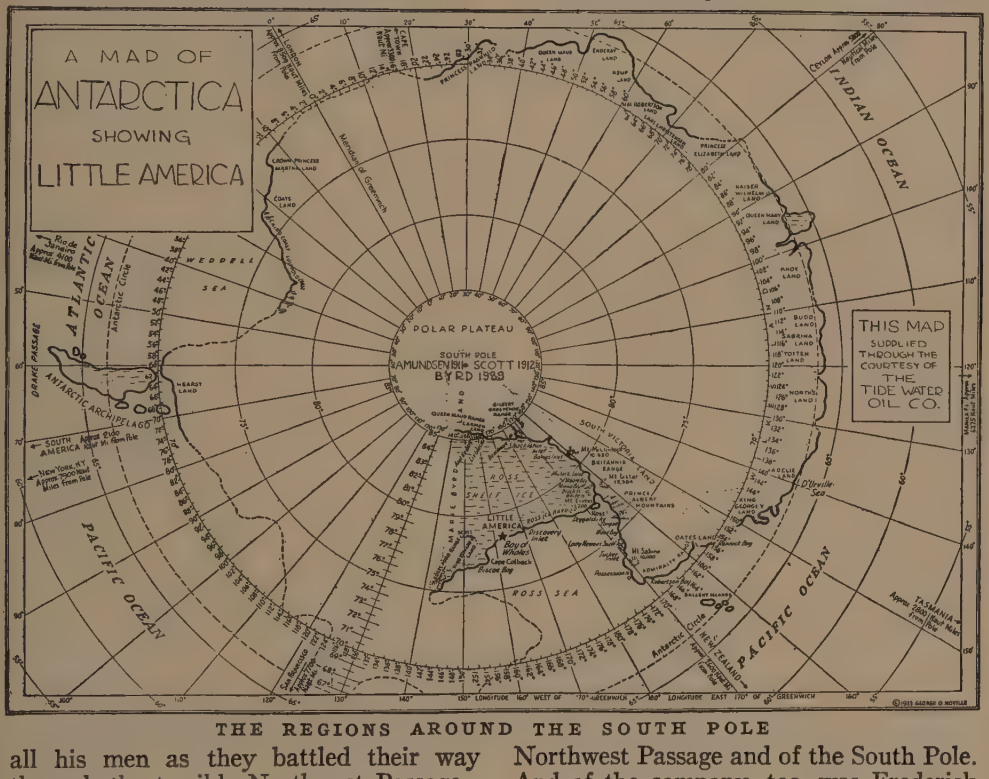
ships that first let light into the Antarctic mysteries, and it was in little wooden vessels that seamen still believed.

The Erebus and Terror reached England, after a cruise of nearly four and a half years, little the worse for their battering by ice or by collision in the dark. They were claimed at once by another heroic spirit, Ross's old friend Franklin. It was the two little ships which had been farthest south that Sir John Franklin chose for the most tragic of all polar voyages. It was the voyage which ended in the loss of himself and all his men as they battled their way through the terrible Northwest Passage.

So far all the voyages into the Antarctic had been in the nature of seasonal visits. Explorers sailed south of the Circle for a short summer, then north to safety for the winter, and back again when light and warmth returned to the higher latitudes. But the custom was broken for the first time in 1897, when the Belgian expedition in the Belgica, under Adrien de Gerlache, sailed south. Lingering too long over scientific observations on the way down, these explorers, to their amazement, when in mid-ice within the Circle, on May 15 lost the sun, not seeing it again until ten weeks had gone by.

The Antarctic winter had caught its first ship! The crew suffered extremely, though well fed. Vitality sank, spirits dropped to zero, men's minds wavered and tottered, and death boarded the little steamer when Lieutenant Danco passed away in the darkness. Light returned in July, but the ship remained frozen in until January, 1899.

The event was remarkable; so was the personnel of the ship, for her mate was Roald Amundsen, future discoverer of the Northwest Passage and of the South Pole. And of the company, too, was Frederick Albert Cook, who was to win ill-fame in 1909 by pretending to have gained the North Pole in advance of Peary.



THE REGIONS AROUND THE SOUTH POLE

Now a winter had been passed by a crew in the Antarctic Ocean. Carsten Egebarg Borchgrevink, a Norwegian who had settled in Australia in 1888 and done some notable seal-hunting from there, next came to England. In 1898 he commanded the expedition in the Southern Cross, sent out by Sir George Newnes, the first ever to winter on the Antarctic mainland.

The experiences differed little, as to

cold and desolation, from those of the Arctic; but there was this difference—the utter absence of visible life in winter, except an occasional Emperor penguin.

In summer there are penguins nesting near the shores, and there are seals, grampuses, and other whales in the water. In winter nothing takes the place of the Arctic bears, foxes, musk-oxen, reindeer and sea-birds: and there is no human soul like the Eskimo.

Borchgrevink's adventure was a picturesque and gallant one, unattended by notable geographical results, but to be remembered for another reason than the fact that it was the first expedition to winter ashore. Nikolai Hanson, a Norwegian, the naturalist of the party, who had left a post at the British Natural History Museum to join the ship, died before summer returned, and was buried in one of the strangest graves in the world.

Before he died he named the site of his tomb: "It shall be where I was photographed last year, beside the boulder on the summit of Cape Adare—there, on the leeside of that stone."

And so it was. His friend, Louis Bernacchi, a Tasmanian scientist, began the digging of the grave, assisted by two Finns who were in charge of the dogs. In a full day's work they dug but four inches. Next day they blasted with dynamite. Eighteen inches down they came upon a buried glacier, which must have been there, unmelting, unaltered, unrevealed, for centuries.

THE PROCESSION OF PENGUINS WHICH LASTED FOURTEEN DAYS

In that concealed glacier beneath the wind-swept boulder, wrapped in the Norwegian flag, Nikolai Hanson was buried. His grave was sixty-five inches deep in the hidden ice. Hanson was a descendant of the Vikings whose dead were the first white men buried in America, over a thousand years ago. Strange, thought his sorrowing comrades, that this later Viking should have come almost to the opposite extremity of the earth to find his sepulchre.

Eskimos witnessed the Viking burials in America. The two Finns witnessed this Antarctic burial. With grief in their hearts they raised native songs of mourning. Perhaps these songs were not unlike those which their Eskimo kindred sang in the far-off days of Viking discovery in the New World.

The Southern Cross party were the first to witness the arrival of the penguins. They met millions of them where they had marched inland over the ice, twelve miles from the sea. For fourteen days the procession of birds went on all the twenty-four hours of each undarkened day and night. The Southern Cross steamed to the highest latitude yet attained. The leader and a comrade made a short sledge journey on land, reaching 78° 50′ South Latitude. With that record the nineteenth century closed.

The twentieth century brought into prominence two figures destined to win immortal fame by their achievements and their heroism. They were Robert Falcon Scott and Ernest Henry Shackleton.

THE DELICATE DEVONSHIRE BOY WHO WAS TO WIN IMMORTAL FAME

Scott was of the great Devonshire line of seamen, born at Outlands, Devonport, in June, 1868. He was a weakly boy whom it was difficult to rear beyond infancy; a boy who, as he told us in his last diary, "had to force himself into being strenuous, having always an inclination to be idle." Yet he was in the navy at thirteen. At thirty-three he had so fine a service record that he was appointed in 1901 to lead the Discovery expedition, taking with him Shackleton, Dr. E. A. Wilson and others who were to win undying fame.

Scott landed at the foot of Mount Terror on Ross Island. Then, turning his ship eastward along the Great Barrier, he discovered a new territory which he named King Edward VII Land. Ross had given the name of South Victoria to his great land discovery, meaning that the whole of the Antarctic continent should bear that title. Too many discoveries were being made for such a plan to be followed, however, and presumably Antarctica will forever remain its official name.

Scott wintered in McMurdo Sound, and in the spring, accompanied by Shackleton and that knightly spirit Wilson, set out on the first great sledge journey south. Over dreadfully rough and dangerous ice the party proceeded for 370 miles due south without being able to reach the mainland.

THE TERRIBLE JOURNEY WHICH SHOWED SCOTT THE WAY TO THE POLE

He had ever in sight the great mountain range which continues South Victoria

Land to the south. But the loss, one by one, of nearly all the dogs; the exhaustion of food supplies; and the breakdown, through scurvy, of Shackleton, drove the party back. They returned after fifty-nine days of deadly peril and hardship, victorious in this, that Scott had discovered a way to the South Pole itself. In the following year he marched 300 miles west over Victoria Land, and was home again in England by 1904, with a great record of work achieved, but pining to be off again to the scene of his labors.

Shackleton was the next to venture forth, as commander of the Nimrod, and reached Cape Royds toward the close of the Antarctic summer in 1908. He was compelled to land here in a hurry, as he found the path to King Edward VII Land blocked by ice. There was also a danger of the coal supply's failing before his ship could get away for the winter.

The seemingly solid ice on which stores were landed suddenly broke up under the swell of the sea. This imperiled not only the stores but eight Mongolian ponies which Shackleton had taken for sledge work. A gale raging at a hundred miles an hour nearly wrecked the ship, and covered the shore with spray which instantly turned to ice.

THE DEADLY FURY OF THE GALES THAT RAGE IN ANTARCTICA

Waves that broke over the ship immediately froze and became ice a foot thick. As some indication of the power of the gale it may be noted that a Russian boot weighing seven pounds was torn out of the crate in which it was lying and blown three-quarters of a mile.

However, such things are part of the everyday life of the Antarctic. There summer temperature is never above the freezing-point. Men lose themselves and are blown away if they walk but a few feet in the darkness of the long winter night. And the wind is such that, in standing to cut ice with a pickax, a man can actually lean on the wind; and, indeed, must do so to maintain his position.

Shackleton adopted Scott's route for the Pole, and would have gained it at the first dash but for one fatal error. He relied on ponies instead of dogs. The ponies, lacking the salt which they were accustomed to lick on their native steppes, ate the salt sand, and it killed four of them. So the pulling power of the party was insufficient and progress too slow for the food supply.

Nevertheless, Shackleton and his party made a superb march over Beardmore Glacier, and on January 9, 1909, reached, on King Edward VII Plateau, a position 420 miles south of previous records. They were within ninety-seven miles of the Pole, but a furious gale raged for sixty hours and nearly killed them all. Food was short, vitality was ebbing so that bodily heat could not be maintained even under full pressure of man-hauling the sledges after the death of the last pony.

MAWSON'S THIRST FOR KNOWLEDGE WHILE HE LAY IN SIGHT OF DEATH

So the party turned back and reached the base just alive. In the meantime a second party from the expedition, Professor T. W. Edgeworth David, Dr. A. F. Mackay and Dr. Douglas Mawson, had made a terrific journey over glaciers and treacherous ice-fields. On January 16, 1909, in 72° 25′ South Latitude, 155° 16′ East Longitude, they had discovered the South Magnetic Pole.

That journey alone was an epic of terror and triumph. The ice lay in folds which were really little hills, and was seamed with crevasses, some of them the more dangerous because covered with snow-lids. Into one of these Mawson suddenly plunged, suspended ten feet down by his sledge harness. In danger of death, he occupied the time while he was being rescued in picking off ice crystals of a new formation from the walls of his death-trap. These he threw up to his comrades, in case he should not survive to examine them at his leisure.

THE YORKSHIRE LAD WHO WENT TO AUSTRALIA AND FOUND FAME

Here we must tell of another of the adventures of Sir Douglas Mawson, as he later became. A Yorkshire boy, he went to Australia in his youth, became a brilliant scientist and carried out a geological survey of the New Hebrides at twenty-one. He was with Shackleton at twenty-six, and in 1911, when twenty-nine, led the Australian expedition to Adélie Land in the Aurora. His personal contribution to the knowledge of our subject was the discovery and exploration of what he called King George V Land. But we must follow him in a sledge journey of extraordinary difficulty.

In the summer of 1912 he set out with two dog teams. His companions were

Xavier Mertz, a dashing scholar-lawyer who was the champion ski-runner of his native Switzerland, and a towering young Englishman, Lieutenant Ninnis, a graduate of Dulwich College.

The little party progressed with difficulty over land covered with ice and snow, converted by hurricanes into hillocks, swells and ridges which looked as if a stormy sea had suddenly become rigid. Everywhere crevasses abounded, covered by snow, and descending hundreds, even thousands of feet.

A MAN WHO DISAPPEARED INTO THE DEPTHS OF A YAWNING CREVASSE

On the thirty-fifth day out, when they had covered 315 agonizing miles, Ninnis suddenly disappeared down one of these crevasses. With him went the best dog team, the sledge on which was nearly all the food for the men, all the food for the dogs, and nearly all the implements. Six emaciated, foodless dogs remained. A tent but no tent poles, a cooking-stove and oil, but only a little pemmican and some thirty-five pounds of almonds and raisins were the remains of the equipment.

All that day Mawson and Mertz endeavored to reach their lost comrade. But except for a faint whimper from one of the dogs which they saw lying on a ledge with its back broken, 150 feet down, and a blurred outline of the sledge, they could discover nothing. Their ropes were far too short to reach down the crevasse to where Ninnis must have fallen. There was no sound from him. Death must have come with merciful suddenness to the brave fellow as he fell headlong into his grave.

The survivors turned homeward in a desperate plight. An abandoned sledge which they had thought useless was found on the trail and broken up with spare skis to make poles for the tent. One by one the starving dogs died, and part of their flesh was given to the remainder, part was eaten by the men.

DR. MAWSON'S THRILLING JOURNEY ACROSS A HUNDRED MILES OF ICE

Finally the last dog died, and the two men dipped deeper into their sledge rations, such as they were. They boiled snow for water and soaked in it bags which had contained tea or cocoa. Then poor Mertz sickened and died. Mawson was alone in that horrible land, with a hundred miles to go, a few handfuls of raisins, and the carcass of a dog for food. The sledge with its tent, lamp and oil had to be dragged single-handed, up ice-hills and down ice-hills. Again and again it pulled him with it, sometimes into crevasses, sometimes over them.

Once he dropped six feet into one of these yawning chasms, hung by his harness and spun. He managed to pull himself up, but on reaching the top, fell again, freezing, exhausted, dying, burdened with snow and ice which had broken and fallen on him. Once more he hauled himself out, feet first this time, then lay trembling and faint, motionless for an hour on the crumbling brink of the awful ice-pit.

Somehow he managed to struggle on, and then, when he had only two pounds of food left, he came upon a depot of supplies left by men who had departed only six hours before his arrival. There was a frightful journey down over the ice plateau. With his smooth shoes, he was blown miles and miles out of his course by the wind. Finally he broke up his wooden instruments, left the nails projecting, and used these as grappling irons for his feet. At last he reached the base—to find that his ship had sailed, leaving five men and stores to sustain him during the approaching winter. Finally, in the spring of 1914, he returned to civilization after one of the most appalling experiences any man ever lived to tell.

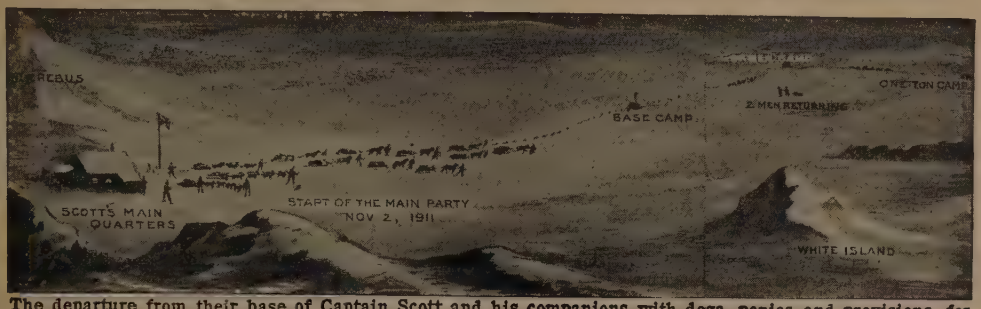
In 1929 and again in 1931 Sir Douglas Mawson returned to the Antarctic and carried on further valuable exploration.

SCOTT AND AMUNDSEN, AND THEIR CLOSE RACE FOR THE SOUTH POLE

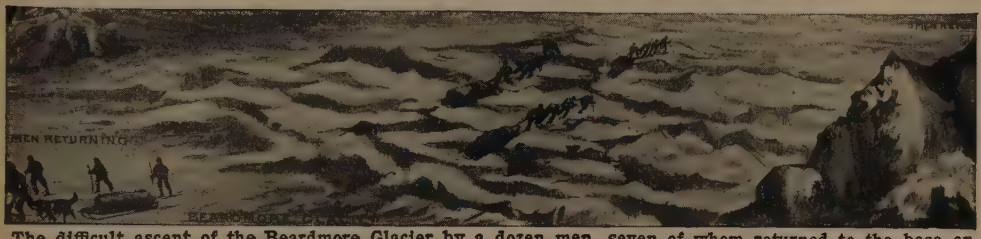
Before returning to Scott and his affairs, we must note the discovery by Professor Erich von Drygalski of Kaiser Wilhelm II Land. Dr. Otto Nordenskiold wintered in King Oscar II Land. Dr. W. S. Bruce spent some months at Laurie Island and explored the coast of Coats Land. Excellent but less important work was done by Dr. Jean Charcot in the Palmer Archipelago, and later in Bellingshausen Sea.

It came to a race for the South Pole after all, and Captain Roald Amundsen won. He had set sail for the North Pole, but learning that Peary had already succeeded there, he secretly made his way across the world. Using the knowledge of routes and conditions which Scott and Shackleton had published, he attacked the problem from the Bay of Whales

THE IMMORTAL STORY OF CAPTAIN SCOTT

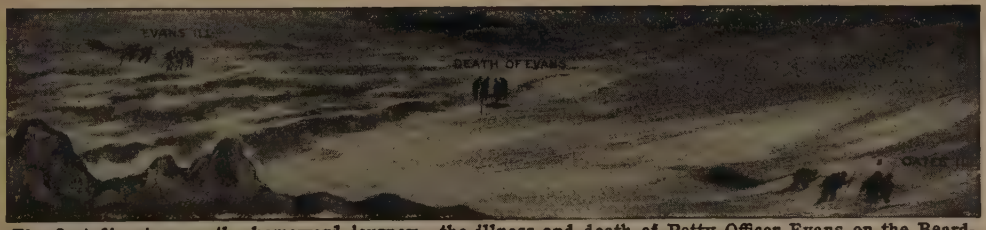


The departure from their base of Captain Scott and his companions with dogs, ponies and provisions, for their dash to the South Pole. The distance to One Ton Camp was 100 miles.



The difficult ascent of the Beardmore Glacier by a dozen men, seven of whom returned to the base on reaching the vast plateau on which the Pole is situated. Five men made the final dash.

The party at the South Pole, which was reached on January 18, 1912. Here they found a letter from Captain Amundsen, who had arrived a month before. Captain Scott spent a day making observations.



The first disasters on the homeward journey—the illness and death of Petty Officer Evans on the Beardmore Glacier, his burial at the foot of it, and the illness of Captain Oates.

The heroic self-sacrifice of Captain Oates, who walked out into the blizzard to die. The final effort of Scott, Wilson and Bowers, and the scene of their death in a tent but eleven miles from One Ton Camp.

on the edge of the Great Barrier. He wintered there, and on October 20, 1911, set out with dogs and men on a final dash for the Pole.

Like Peary, he had marvelous fortune. Instead of the dreadful weather which was to doom Scott to death, he had mainly fair going, though he had to march through blizzard spells which few but these Vikings would have been tempted to encounter.

There were deadly dangers, too, from crevasses. Perhaps the most sensational scene of all was when one of the party, Helmer Hanssen, fell with his sledge into a crevasse six feet wide, the sledge slanting across it, the dogs safe across. A movement or two would have sent the whole lot, man, sledge and dogs, spinning down. And that movement was threatened by the dogs, which fought as they always fight at the least provocation.

Like a lot of roaring tigers (says Amundsen) the whole team set on each other till the hair flew. If this went on all was irretrievably lost. One of us jumped the crevasse and fortunately got them to stop. At the same time Wisting threw a line to Hanssen and hauled him out of the unpleasant position.

THE EIGHTEEN DOGS WHICH REACHED THE POLE WITH AMUNDSEN

The quarrelsome dogs won the Pole. The hapless ponies lost it for England. Of the fifty-two dogs with which Amundsen started, he killed twenty-four when the worst of the hauling was over, and ate them. Eighteen reached the Pole, pulling marvelously up the frightful slopes, as if they knew the glory attaching to their feat. Twelve reached the home base once more, triumphant.

When rather more than half the journey had been covered, the party had to climb a mountain range over 10,000 feet high, and up it they went with their terrific sledge-loads. Man and dog work together as to the manner born when the man is of the Norse tribes, and so it was here. After this climb they dropped 3,000 feet, and next had to surmount another glacier high and perilous. Then they were on a plateau which for the next 120 miles sloped gradually downward to the Pole.

Roald Amundsen reached the South Pole on December 14, 1911, and the dream of ages was realized.

Meanwhile Captain Scott had sailed from London in the Terra Nova in June, 1910, two months before Amundsen had turned his ship about from the North to the South. He wintered on Ross Island again. During the spring depot-laying parties got far forward, but from the outset Scott met difficulties.

The weather was of exceptional severity; the sea ice over which stores had to be carried broke up, and some ponies were lost in this way. Huge grampuses seized others, and some were killed with pickaxes to save them from so horrible a fate.

HOW THE GLORY OF FINDING THE POLE WAS LOST FOR ENGLAND

Half his haulage power was lost at the base, and the weather continued bad. Scott delayed his start in order to spare hardship to the remaining ponies. Dogs would have got him through, all seasoned Antarctic men say; ponies doomed him. On the great march for the Pole, which was begun on January 4, 1912, the ponies were used up and had to be killed one by one before half the journey was accomplished. Then the Pole party had to do the hauling, up mountains, over glaciers, across heavy ice and snow, by themselves.

Five men made the final dash to the Pole, which was to lead them to their doom. They were Captain Scott, Dr. E. A. Wilson, Lieutenant H. R. Bowers, Captain L. E. G. Oates and Petty Officer Edgar Evans—as rare a band of heroes as ever faced the pitiless Antarctic. For thirteen months nothing was heard of them. Then the finding of the last camp and the men's diaries gave to the world the story of their almost incredible fortitude and nobility of mind. The tragedy was all the greater, as this fateful camp was pitched only eleven miles from a well-supplied depot.

The party had reached the Pole on January 18, to find their triumph dashed by the knowledge that another had been before them. At this loneliest place on earth they found a tent and message written in Amundsen's hand: "Welcome to 90 degrees." A letter from the same hand told that Amundsen had reached the Pole a little over a month earlier.

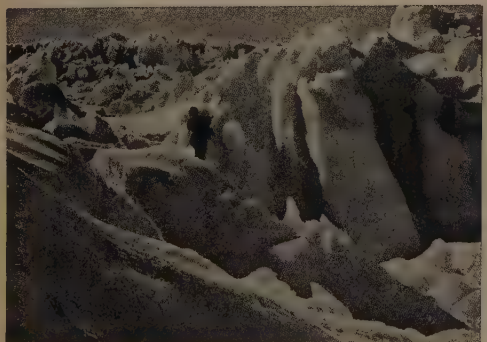
Sad and heavy-hearted, the men turned back. Their equipment and their rations were insufficient. Though it was summer, the weather, which had favored Amundsen, turned against them. The mighty Edgar Evans, their mainstay in pulling

PICTURES OF THE MAWSON EXPEDITION

Building a depot in Adélie Land for the expedition of Sir Douglas Mawson.

The kind of life Sir Douglas Mawson found on the Mackellar Islets.

Sir Douglas Mawson at the end of his tragic journey, after the deaths of Ninnis and Mertz.



Picking the way across ice near Cape Denison.

The Aurora lying at anchor in Commonwealth Bay.

Many of the pictures on these pages are reproduced from Sir Douglas Mawson's book The Home of the Blizzard, published by Heinemann; others are from photographs by Mr. Herbert G. Ponting, United Newspaper, London, and Underwood & Underwood.

the sledge over the rough ice, broke down and held them back. To make matters worse, he had a serious fall on Beardmore Glacier and died on February 17. Next the gallant Oates began to weaken. Despite the encouragement of his comrades, he knew that he was fatally retarding them. So one morning, when the blizzard was raging mercilessly, he said, "I'm just going outside, and I may be some time." On terribly frost-bitten feet he tottered out into the bitter cold and storm, never to return, so that his friends might have a chance to live. "We knew that Oates was walking to his death," wrote Scott, "but though we tried to dissuade him, we knew that it was the act of a brave man and an English gentleman."

In vain Scott, Wilson and Bowers struggled on. Within a short march of the supply depot, One Ton Camp, which a relief party had left only a few days before, the elements drove them to their little tent. They had fuel for one hot meal and food for two days, but the blizzard raged for more than a week and held them there to die. They made up their diaries and wrote their farewell letters. Scott's spirit, especially, rose above all suffering, and in a noble message he set down the reasons for the failure and paid tribute to his comrades. Death came after four days, Scott evidently being the last alive.

Dr. Wilson.

Lieut. Bowers.

Captain Oates.

Petty Officer Evans.

THE FOUR MEN WHO WENT WITH SCOTT TO THE SOUTH POLE

Not until November 12, 1912, did a search party under Dr. Atkinson find the silent tent, by instinct rather than by sight. The bodies of the three men were left there, embalmed in the ice. When Shackleton sought the site a few years later the tent of death had drifted away with the great ice-sheet and could no longer be found.

SHACKLETON DRIFTS FOR MONTHS ON AN ICE FLOE

Scott was the Franklin of the South; shall we say that Shackleton was the Barents? In 1914 he set himself the appalling task of actually crossing the Antarctic continent from the Weddell Sea to the Ross Sea—1,800 miles, of which half, from the Weddell Sea to the Pole, was unknown ground. Nearly 5,000 men volunteered to fill the 56 places available in the expedition, which left just after the World War had broken out. The ship—Endurance was her name—and the entire company were offered to the government for service, but were bidden to proceed on their way. When they returned two years later, after incredible adventures, their first question was, "How did the war end?" The war was then but mid-way through its dreadful course.

In brief, this is what happened: New land was sighted and named Caird Coast, but the weather was bad, the Endurance could find no landing-place and was frozen in, in January, 1915. For nine months she drifted with the ice until she was finally crushed to fragments, leaving the 28 men stranded on an ice floe. Luckily they saved much food and gear, as well as three boats. For five months they camped on their icy raft, in imminent peril of their lives, ill-fed and equipped. In April, 1916, the floe broke up and they took to the boats, reaching Elephant Island with its glaciers after six days of terrible hardship. But the sufferings were not yet over. Leaving Frank Wild in charge of 21 men on a desolate sandy pit swept by blizzards, with only the barest food-supply and two upturned boats for refuge, Shackleton with five men took to the remaining 22-foot boat and reached South Georgia, 750 miles away. After three attempts he succeeded in August, 1916, in rescuing the entire party.

Another section of this expedition was to have met Shackleton on the Ross Sea side of the Antarctic continent. It succeeded in laying depots, but its ship, the Aurora, was swept into the pack ice in May, 1915, leaving a party of nine stranded on the mainland. The Aurora did not get free until nearly a year later. The leader and two others perished.

Sir Ernest Shackleton — he had been knighted in 1909 — set out on another voyage, in the Quest, in September, 1921.

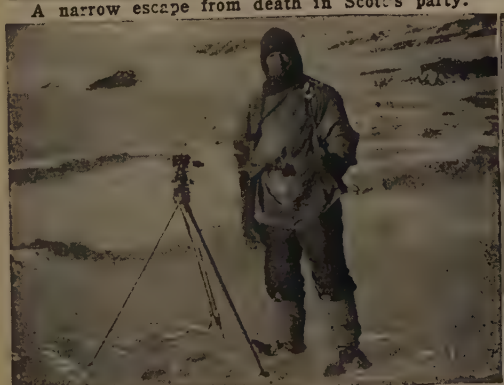
THE HARD LIFE OF THE ANTARCTIC

Shackleton and his party spend a night on an iceberg.

Pillars of snow erected by Shackleton's men to guide them in snowstorms.

A narrow escape from death in Scott's party.

Shackleton outside his tent on Elephant Island.



Commander Evans, who took charge of the expedition after the death of Scott.

Leaning on the wind—a member of Mawson's expedition picking ice.

However, he had overstrained his heart and died at sea four months later. He was buried in South Georgia, that little island just short of the Antarctic Circle which had witnessed one of the most heroic of his many feats of knight-errantry and splendid resource. Frank Wild, his second in command, carried on the expedition.

THE AIRPLANE INVADES THE ANTARCTIC

For several years after Shackleton's death Antarctic exploration lagged. Then, in 1928, a new era dawned and several assaults began to be made on the great desolate continent. Sir George Hubert Wilkins, who, together with Ben Eielson, early that year, had made a remarkable flight from Alaska to Spitzbergen (see page 4723), took his plane to Deception Island and on December 20, 1928, was the first to fly in the Antarctic. He returned a year later and made several more flights to Graham and Charcot Lands. Altogether he flew about 6,000 miles and discovered 14 islands and 1,500 miles of coastline.

It was soon found that the airplane increased the scope of Antarctic exploration a hundredfold. Where men had once plodded wearily over the ice for weeks, the plane in a few hours smoothly and accurately took in thousands of square miles.

Rear-Admiral Richard Evelyn Byrd, of the United States, who had already flown over the North Pole and the Atlantic Ocean, took along several airplanes when he set out on his first Antarctic expedition in 1928. This was by far the best equipped of its kind. Every possible chance was provided for. There were several scores of picked men and it took four ships to carry the expedition to its base. This was established on the Ross Ice Barrier at the Bay of Whales and named Little America. Several buildings and hangars, some of them dug into the ice, were built, as well as a large radio station, through which the expedition always stayed in touch with the outside world. Here, 2,300 miles from the nearest human habitation, 42 men spent 14 months.

ADMIRAL BYRD FLIES ACROSS THE SOUTH POLE

Though the chief aim of the expedition was scientific, its highlight was Byrd's flight to the South Pole on November 29, 1929. With Bernt Balchen as pilot, Harold I. June as radio-man and Captain Ashley C. McKinley as aerial photographer, he set out from Little America in the tri-motored monoplane, Floyd Bennett. There was trouble in crossing some high mountains, but the Pole was reached without incident and a flag of the United States was dropped there. To honor Scott and Amundsen, flags of Norway and England were also dropped and a French flag in token of the warm reception Byrd received on his ocean flight. Nineteen hours after the start the fliers were safely back in Little America with which they had remained in unbroken radio communication.

When the expedition returned in 1930 it had mapped 500,000 square miles of territory—200,000 of it never before seen—made 23 flights and collected a vast amount of scientific material. Three years later Byrd led a similar, larger expedition. Four airplanes, including an autogiro, were taken along, as well as five tractors. Little America was dug out again and enlarged after there had been much trouble and danger in unloading and transporting a million pounds of stores. Byrd himself elected to stay five months completely alone at an advanced weather station 123 miles south of Little America, where he nearly died of poisonous fumes from his stove before relief came. This time the whole world could listen in on the expedition and some of you may have heard the radio broadcasts to and from Little America. As in the previous expedition, many flights were made and much territory was mapped and explored. Several sledging journeys were undertaken, one to within 183 miles of the South Pole. Important exploration was carried out by ships and by plane operating from the ship. To give an idea of the scientific work, here are some of the fields of science covered: the weather, astronomy, biology, zoology, botany, geology, physics, magnetism, bacteria, glaciers, map-making. Altogether 56 men spent a year at Little America, and our knowledge of the Antarctic was greatly increased.

OTHER RECENT ANTARCTIC EXPLORATION

The American explorer Lincoln Ellsworth and Sir Hubert Wilkins set out early in 1934 to fly across the Antarctic continent, but their plane was damaged on the ice. Later that year Ellsworth tried again from Deception Island with Bernt Balchen as his pilot, but bad weather and motor trouble kept him on the ground.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5247.

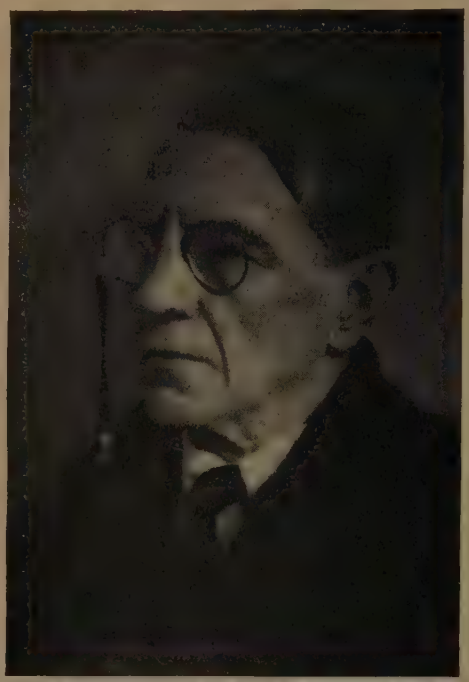
WITH BYRD AT THE SOUTH POLE

Hundreds of tons of stores had to be transported from the edge of the ice to Little America, several miles away, for the second Byrd Expedition. Here a dog team is starting out from the ship Jacob Ruppert. Tractors and even airplanes were used in shuttling back and forth.

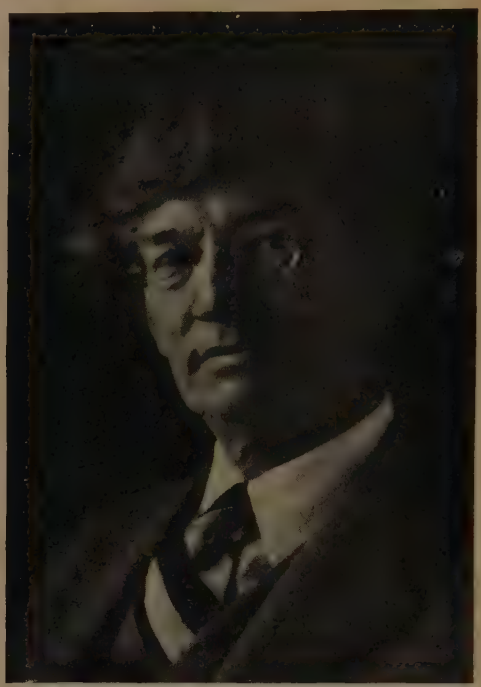
Members of the second Byrd Expedition at dinner in their mess-hall, which was also a bunk-house. Little America, besides having telephones and electric light, even had a dairy, housing three cows and a bull.

Wide World Photos, © Byrd Antarctic Expedition II.

FOUR WELL-KNOWN WRITERS



Charles G. D. Roberts grew up in a rectory in New Brunswick in a happy family of five. His poetry, novels and animal stories are widely read to-day.



Bliss Carman, a cousin of the Roberts family, who also lived in New Brunswick, has often been called the poet-laureate of Canada. He died in 1929.

Mrs. Isabel Ecclestone Mackay, a writer of both poetry and prose, produced charming poems for children. We speak of her novels on page 5371, in the next literature chapter.

The poetic work of Marjorie Pickthall has very unusual qualities of sensitive feeling and insight into the hidden soul of things. She was born in England, but grew up in Toronto. She died in 1922.

Home of Thomas Chandler Haliburton, "Sam Slick," at Windsor, Nova Scotia.

CANADA'S POETS AND PROSE WRITERS

PART I

DID you ever think how every day is a birthday? Of course none of us could account for a birthday on every single day of the year. But you know some and I know others; your neighbor knows others still, and my neighbor knows some that none of the rest of us would think of; and so it goes, until they all might be counted in. Some birthdays we celebrate—birthdays of our friends, birthdays of noted men and women, birthdays of nations, birthdays of important movements and undertakings. And many, many birthdays are passed by without a thought. But for somebody, somewhere, each day is a day to be remembered because of some special beginning.

In the month of March in the year 1921 a new birthday was tucked into the Canadian calendar when the Canadian Authors' Association came into being at a convention held in Montreal. There Sir Arthur Currie welcomed to McGill University a company of men and women skilled in the use of a little tool which, we have all heard, is mightier than the sword. We do not always realize that an author's effort is not ended when he has put down his ideas in words on paper. He then must start his pages on the right road in order that they may reach us. He may be helped or hindered by publishing conditions, by laws of copyright and by other practical circumstances. For the purpose of getting better conditions in the publication of their books the writers of Canada—East and West, English and French, those living at home and those who have been resident in the United States, where publishing opportunities are greater—all have put their efforts together in a great association consisting of a central organization with a number of branches. This will be for the benefit of their future in literature, that Canadian singers and story-tellers may be able to find in their own land a chance to develop their gifts for her and for the world.

But present and future are builded upon the past. Let us look back a little upon the writings of men and women who lived through the earlier, harder days in this great land. A friend once said to me that it takes many persons who live poetry to make one real poet. And one of the speakers in the Authors' Convention at Montreal expressed the same thought in beautiful form when he said of the

pioneer times, "We were living our poetry, ballading in great bridges and sonneteering in steel rails and conceiving epics in new empires of grain-land," with scant time for the making of song in words.

The French Folk Song and the Scotch Hymn

Song of some sort men and women must have. The sturdy Normans and Bretons who came to New France brought with them the folk songs of their ancestors; and these, passed on from father to son, from mother to daughter, taking on a new tone on the tongues of new generations, though not greatly changed, became *Les chansons populaires du Canada*. (As the Songs of Old Canada they are published in English translation.) So, too, the early English and Scotch settlers in the eastern provinces sang songs of devotion which were dear to them from long association. Religion was the keynote of their lives, finding expression in hymns and sermons and journals of personal experience—the first forms of writing by English-speaking persons in the country.

The Contribution of the United Empire Loyalists

Indeed, two precious possessions, to be of countless value to Canada, were brought into their new homes by the United Empire Loyalists when they fled from the United States to settle in Nova Scotia and what is now New Brunswick and Ontario. Houses, lands, furniture, jewels—comfortable living—they left behind; but nothing could part them from their strong religious beliefs and their fine grounding in knowledge. Some of the best-trained minds of the older English colonies were to be found among those men who moved from Massachusetts, New York and other states into the Maritime Provinces. There was a time, it is claimed, when there were more graduates of Harvard College in Canada than in Massachusetts. Judges, professors, preachers and men of large properties, transferred their interests and influence to the newer settlements. They might live in log cabins and labor hard for bare existence; yet they had books and learning, and in their hearts was a firm resolve that their children should not grow up untaught. Thus they laid deep, firm foundations for Canadian education and letters in generations to come, when some of their children and children's children led the way as thinkers and writers in English Canada.

The roots of historical and romantic interest in this land of twofold tradition lie deep. "Happy perhaps is the country which has no history," says one of the later writers, "but happier still is the country which has a history of such surpassing interest as that of the Dominion of Canada." At the moment Jacques Cartier sailed into the Gulf of St. Lawrence a door was opened into a field of adventure as broad as the continent—a field which still shines with fresh possibilities and attractions. As the Old World peoples found their way step by step overland toward the Pacific, their pathway was set with shifting scenes, strangely picturesque and adventurous. Indians, either friendly or hostile; horizon-wide herds of buffalo; perils of woodland, prairie, mountain and cataract, were part of the daily life of explorer, fur-trader, missionary, miner, railway-builder and pioneer settler.

The journals and descriptive accounts from which we learn the stories of those early times go back to the founder of Quebec himself. In the French narrations of Champlain, Hennepin, Charlevoix and others, and in the Jesuit Relations we find the beginnings of the tale of New France. For the opening-up of the interior country and the Northwest we may turn to the English journals of such travelers as Samuel Hearne, Alexander Mackenzie, David Williams Harmon and Alexander Ross, whose narratives are often stirring and lively.

Some of the First Truly Canadian Writers

All this, you will see, cannot be counted as real Canadian literature. Men and women coming from other surroundings had put into words their impressions of the new country and had written accounts of events that affected their own lives, and these have become storehouses of material for later writers of romance. But in the period of thirty or forty years just before confederation native-born writers in both languages were putting forth books which deserve attention.

In Lower Canada, Michel Bibaud and François Xavier Garneau were writing both poetry and history, while Joseph Lenoir was writing better poetry than either of them. Bibaud, who lived in Montreal, edited magazines in which authors were able to publish their efforts; he himself wrote a three-volume history

of Canada, telling of the country's political beginnings. Garneau, a native of Quebec and for many years city clerk there, put his very life into the production of a careful study of Canada's history, *L'histoire du Canada,* which is still looked upon as a standard account of the country's progress up to 1848. Some time later a clear, careful, painstaking study of the French régime was published by l'Abbé Ferland, a professor at Laval University.

Histories of the War of 1812 were written by Major John Richardson and others, and An Historical and Statistical Account of Nova Scotia, by Thomas Chandler Haliburton, was printed in Halifax by Joseph Howe. Howe himself was a poet, journalist, and a very noted political orator. The power of his thought and influence shows more and more clearly as time passes. In 1828 he bought the journal called The Nova Scotian. Its distribution was not limited to the Maritime Provinces, or even to the Canadas, but extended into the United States and Great Britain. Through it the statesman-essayist, whose knowledge of colonial affairs was solid and whose style was direct and easy, reached a large audience. Other writers, too, found in its pages an opening to the public. From Howe's press came every year some work that counted in the country's development along the lines of history or literature.

The Sayings and Doings of Samuel Slick of Slickville

In 1835 an anonymous author began publishing in The Nova Scotian some sketches so novel and amusing that they instantly became popular and were reproduced at once in United States journals. The following year, in a more complete form, they made their appearance as a book under the name of The Clockmaker; or The Sayings and Doings of Samuel Slick of Slickville. No one realized it at the moment, but a new figure in literature had stepped out into the world to take his place among immortal fun-makers. Before long everyone knew he had come to stay.

Several new series of the sayings and doings of this Yankee peddler, with his sharp bargaining and his clever comments about the life of the times, were published from year to year, the last two being Sam Slick's Wise Saws and Modern Instances, and Nature and Human Nature. The style was pleasing; the pictures of the countryside, with its own particular manners and customs, were clear, true and interesting; the characters presented were life-like; and the sayings, apt and striking, were worded in quaint dialect. In the person of Sam Slick a new type of humor, to be known thenceforth as American humor, made its first bow. For almost a century Sam has held his place, living through 120 editions, introduced among at least seven nations, welcomed, quoted and imitated. You may get an impression of his style from the excerpt under Famous Books. But the author's own purpose in writing these sketches had been not merely to entertain his readers: it was his earnest intention to arouse Nova Scotians to place proper value upon their land and to use their influence toward building up the bonds between Canada and the mother country.

This author was Thomas Chandler Haliburton, who had already written the History of Nova Scotia. Descended from a Scottish family, born and educated in Nova Scotia in the midst of strong Loyalist traditions, he studied law and became chief justice of the court of common pleas, and later a judge of the supreme court. We are told that he was slender but robust, with a ruddy face, keen blue eyes, and a smile that lurked in the corners of his mouth. After many years of active life in his native land he spent his later years in England, where he held a seat in Parliament and often spoke in favor of imperialism. His Clockmaker was greeted as the first original work of America, and was freely compared with the books of Dickens which appeared about the same time.

Some Early Literary Magazines and Newspapers

Various newspapers and magazines had long furnished food for both English and French readers, but none equaled The Nova Scotian and The Literary Garland. The latter, which had its circulation chiefly in the Canadas, stood particularly for a new nationalistic idea—the effort to make a distinctly Canadian school of writing, using Canadian material. Among the contributors were Mrs. Catharine Parr Traill and Mrs. Susanna Moodie, two English sisters, members of the gifted Strickland family. From their own experience as pioneer settlers they wrote accounts of life in the new country, and

gave interesting descriptions of places and conditions. You will be interested in the excerpt from Mrs. Moodie's story Roughing It in the Bush, which is included in the Famous Books.

Mrs. Traill, in her books, gave much attention to the study of native trees and plants. Of the native-born writers who were represented in The Literary Garland we shall speak about three—John Richardson and Mrs. Leprohon, who wrote romantic stories on Canadian subjects; and Charles Sangster, whose poems sang the beauties and glories of his own land.

STIRRING STORIES OF ADVENTURE AMONG THE INDIANS

Major John Richardson was born in 1797, near Niagara Falls, and grew up at the Fort of Amherstburg, where his father was surgeon and judge. The impressions made upon the boy by the picturesque military surroundings, the officers and men, the Indians coming and going—all the color and movement of the fort—are reflected in his stories of Indian and Canadian life. He owed much to his grandmother and his mother. The grandmother, daughter of a French family, used to relate to him fascinating tales of history and adventure, particularly of the siege of Detroit by Pontiac, which she remembered, as she had been in the town during the siege. His mother was the wise guide of his studies, helping him to a good knowledge of the English and French languages.

At the age of fifteen Richardson was a volunteer in the War of 1812, and in 1815, as a member of the British army, went to Europe, hoping to fight against Napoleon. But as Waterloo had been won before he arrived, his fighting was done in Spain. After his return to Canada, in 1838, he was occupied with newspaper work, and for a time acted as superintendent of police at the Welland Canal. His military figure made a striking picture, especially when he was carrying pistols or had with him his horses or a pet deer. A haughty spirit made him quarrelsome and kept him apart from others. While his stories were popular, there were not enough readers in Canada to furnish him support. So he went to New York and tried to adapt himself to a new audience. But the struggle ended sadly. There came a day when Major Richardson had to sell his last companion, a fine Newfoundland dog. "Hector," he said, "you and I must part or starve." A few days afterward, however, the Major died. It was in the year 1852.

Of Richardson's books the finest is Wacousta, a tale of the conspiracy of Pontiac. It is one of the best Indian stories ever written, and is being read again to-day after having been lost sight of for years. You will find an extract among the Famous Books. In The Canadian Brothers and The War of 1812, too, the author's understanding of the traits and habits of the red men is clearly shown.

One of the foremost leaders of the new Canadian school of writing was Mrs. Leprohon, who lived in Montreal. Her maiden name was Rosanna Eleanor Mullins. When she was but a girl of sixteen her first story was published in The Literary Garland. Several of her books have been translated into French, and are as popular in one language as in the other. Antoinette de Mirecourt is considered the finest.

While we are thinking of novel-writing before confederation we must not pass by two French novelists of the period—Philippe de Gaspé, who wrote in charming style of the end of the French régime and the beginning of the British; and Antoine Gérin-Lajoie, who pictured country life in Canada and sounded a call for colonization.

Charles Sangster, born at Kingston, Ontario, in 1822, of Loyalist and Scotch parentage, was hardly more than a baby when his father died. The boy had to give up study in school at an early age to help support the household. In spite of having to work hard, with little chance for literary training, Sangster produced the first poems on distinctively Canadian themes. They are: The St. Lawrence and the Saguenay, and Other Poems; and Hesperus, and Other Poems and Lyrics.

ONE OF THE FIRST LONG POEMS WRITTEN IN CANADA

In 1857 there was published in Montreal a long dramatic poem, Saul, by Charles Heavysege, an Englishman who had come to live in Montreal in 1853. It is interesting to think that his drama had been composed for the most part while the author's hands were busy at cabinet-making or wood-carving; for while Heavysege worked beside his craftsman's bench all day he would be thinking out the lines of his poems. And at night he would write them down. His educa-

tion, like Sangster's, had been acquired largely by reading. The Bible and Shakespeare made the deepest impressions upon his thought and style. Saul, in spite of defects, had so much in it that was original and powerful that it was greeted with favor in England and the United States; but Heavysege's later works, Jephthah's Daughter and a number of shorter poems, have better finish and form. When the poet gave up his trade to become a newspaper reporter he perhaps made a mistake, since the task of journalism left him little opportunity for poetry-making.

In 1860 and the years just following, the fairies of song must have been flitting about from cradle to cradle on the lookout for a chance to touch baby tongues with their golden wands, so many poets had their birth-dates in those years. And when the 1860 babies were just seven years old the Dominion of Canada itself was born. Confederation of the provinces then made a new national birthday and gave new patriotic themes to be woven into words.

THE FLOWERING OF PATRIOTIC POETRY IN CANADA

"You can't throw a snowball in Canada without hitting a poet," said someone not many years ago. While this, of course, is not literally true, there are so many who have written and are writing fine, graceful, often beautiful, verse that we cannot even mention them all in our limited space.

When the new Dominion was born a young man, Charles Mair, was preparing to publish his first little volume of poems. He was a forerunner of the company soon to be heard singing their songs about Canadian nature and life. His volume was given to the public in 1868. Then for several years he lived in the Northwest writing letters to The Toronto Globe and The Montreal Gazette, describing the country so as to encourage settlers to move into the new regions. He was a prisoner for a while in the Riel Rebellion and lost some of his manuscripts. A number of years later he published a drama, Tecumseh, which, as the name shows, tells a story connected with the home soil. This distinctly native drama, noble in tone and patriotic in spirit, holds a special place in Canadian literature. Its author, never losing the lively interest and enthusiasm of a youthful spirit, died in 1927 in his eighty-ninth year, having long been the dean of Canadian letters.

Another of the earlier poets of the Dominion had come from Ireland with her parents—a thoughtful little blue-eyed child whose mind treasured up the interesting things she saw around her in the new village where she lived—a village that was just being hewn out of the forest in Upper Canada. The work of home-building in the new land, as well as the loveliness of all nature, were pictured in the verses that came from her pen when she grew older. Life for her was sad and hard, and not very long, but she had a brave spirit and she always kept her singing dreams. She was a true poet. Her gift was too great for any human trouble to destroy. This was Isabella Valancy Crawford.

A GIFTED FAMILY IN A NEW BRUNSWICK RECTORY

In a rectory at Fredericton, New Brunswick, the fairies must have visited very often; for the four brothers and their one sister who grew up there, when the Dominion was young, were all gifted with unusual power of writing both verse and prose. In their study in the attic, in the fragrant tree-shaded garden, or in the family sitting-room the little group spent hours of happy companionship and rivalry, making rhymes and stories, reading them to one another, getting the wholesome criticism of father, mother, brothers and sister.

The oldest of the boys, Charles G. D. Roberts, whose books—poetry, novels and animal stories—are eagerly read by thousands to-day, writes sometimes with grateful affection of the old rectory in its happy setting near the Bay of Fundy, where the marshes of Tantramar overflowed with natural beauties and Fort Beauséjour stood like a sentinel of the past, hinting of old deeds and traditions. We shall say more of him later.

One brother died, but the other two, William Carman Roberts and Theodore Goodridge Roberts, as well as their sister, later Mrs. Elizabeth Roberts Macdonald, became well known through their published prose and verse. And the gift has been passed on to the younger generation, where some of the sons have given good proof of sharing the family talent. Both generations took their places at the front during the World War.

A cousin of the Roberts family, William

Bliss Carman (1861–1929) has been given first place among the poets who awakened with the Dominion. He, too, lived as a boy in the midst of New Brunswick's loveliness. The flowers, the trees, the birds, the streams sang to him; and before long he began singing of them with a rare flow of melody. In this quality he has, perhaps, no equal among Canadian poets. Songs from Vagabondia, Pipes of Pan, and April Airs are the names of some of his volumes of verse. Both cousins spent much time in the United States, and both devoted considerable attention to important editorial work.

A POET WHO LOVED TO WRITE OF THE COUNTRY

Of Archibald Lampman a Canadian fellow poet said, "No one has written more happily of our seasons and landscapes." Weakened by illness in his childhood, Lampman never knew robust health; but he always had a fine high spirit that could smile and keep in tune. His was a personality quiet but so attractive that "all who knew him loved him deeply." His sympathy was awake to everything in nature—burs and tree-toads and insects as well as buttercups and thrushes and sunsets. Although he lived in town, he loved to wander out into the country spaces, where he could feel the deep calm of the landscape and absorb it as Corot, the French painter, used to do. Then, when the scene was a part of himself, he would picture it in words which pass on to the reader the impression he had gained. The poet died early in the last year of the nineteenth century, and the next year his collected poems were published.

William Wilfred Campbell's lines of verse are full of force and vigor. Man and his ways and interests are the subjects that sound most often in these poems, which speak from an untamed soul and breathe a noble earnestness. Besides his Lake Lyrics and many other short poems, including some stirring lyrics of the World War, he has written tragedies and novels. For six years he was a clergyman, but in 1891 he turned his full attention to literary work, which formed his chief interest until his death, in 1918.

MORE OF THE LONG LIST OF CANADIAN POETS

One Canadian poet, who has written verse that is peculiarly Canadian, was not in the first place either a Canadian or a poet. Dr. William Henry Drummond was born in Ireland, but lived in Canada from small-boyhood. When his father died the lad learned telegraphy to help to care for the family. Later he studied medicine, and for a number of years was a physician, living in Montreal. His hunting and fishing trips gave him a chance to become well acquainted with his guides and their folk-lore. For his own pleasure and that of his friends he made verses in habitant dialect, picturing the simple, friendly folk in a new form of literature. One of Canada's leading French poets called him the "pathfinder of a new land of song." When the scattered pages had been gathered up and published, his French-Canadian Poems and other volumes brought their author fame both in Europe and America. In 1907 Dr. Drummond died. He was widely mourned.

George Frederick Cameron, a Nova Scotian, had a short life, but left poems which gave such promise that his death is looked upon as a real loss to Canadian letters. Dr. Duncan Campbell Scott, a lover of music and a writer whose phrases are often exactly and delicately chosen to reproduce a feeling of color or a quality of sound, has published several volumes of fine lyrics and ballads. Canon Frederick George Scott of Quebec, during years of service as a clergyman, has gathered up into poetic form many thoughts covering a wide field of interest. In the World War he gave heroic service as major and senior chaplain of the First Canadian Division.

When a practical engineer who has helped to open the wilds for railway-building can express his meditations in skillful musical measures, we may expect to find in his poems clearness of understanding and keenness of vision. This is true of Alan Sullivan's verse, in which a frequent theme is the praise of man's honest toil.

Advocate, poet and novelist, William Douw Lighthall, of Montreal, has also edited collections of Canadian poetry. He was the founder of the Society of Canadian Literature.

Arthur Stringer, of whom as a prose writer we shall have more to say, must be mentioned here, since he writes poetry "as full of beauty as a garden."

A young man of twenty, Robert W. Service left for Canada after having been educated in Scotland. From some ten years or more of shifting residence in dif-

ferent cities of the Far West, including the Yukon district, he gathered impressions which he molded into verse of forcible, striking language and sweeping rhythm. In this and in his novels is embodied a certain passing phase of Canadian life—that of the pioneer, the ranger, the miner. Service pictures human action—stirring, restless, often violent—seen from close at hand. His later experiences were in Europe, where he acted as newspaper correspondent in the second Balkan War and drove an ambulance in the World War.

A poet with three generations of Canadian ancestors behind him is Wilson Macdonald, who combines a passion for unconventionality and the open air with a notable gift for apt and original phrasing. No form of art comes strange to Mr. Macdonald, and no part of Canada is unfamiliar to him. He has sat above a British Columbia valley designing very original pen decorations for his books of poetry; he has written, composed and produced fantastic musical comedies in Toronto; and he is probably one of the best amateur jugglers on the continent.

Dr. William Henry Drummond.

Robert J. C. Stead, of Ottawa, who by his verse, notably the volume Kitchener and Other Poems, has made a secure place for himself as a poet, is also a novelist. And the Reverend George W. Kerby, of Calgary, combines the gifts of poet and essayist. Others whose poetry mirrors our own day or plays upon themes of age-long interest are: J. E. Middleton, a leading newspaper columnist; Robert Norwood, clergyman and scholar; Alfred Gordon, a young Englishman; Arthur S. Bourinot, gifted son of Sir John Bourinot; and Dr. Edward Sapir, of Ottawa.

Bernard Freeman Trotter, who was killed in the World War, left a little volume of verse entitled A Canadian Twilight, which shows that he would have carried on the Lampman tradition. John McCrae, who also died in the war, will be long remembered by his perfect rondeau In Flanders Fields, and a half-dozen other equally polished poems. Edwin J. Pratt's Newfoundland Verse is the work of a Toronto professor, and shows a very modern sense of the pictorial beauty of the sea and sea life. His pen has the art of making a very lovely seascape.

WOMEN WRITERS OF VERSE

Of the many women writers of verse—and good verse—we can choose here only a few. Mrs. S. Frances Harrison, known by the pen name of "Seranus," living in Toronto, has written many songs and composed the music for them. She is an authority on French Canadian folk songs, and has found great interest in the study of French Canadian life, beautiful sketches of which she has gathered up into poems written in English words but in old French poetic forms.

Two volumes hold the writings of E. Pauline Johnson, of whom we think with peculiar interest because she was born on the Grand River Indian Reserve, Ontario, her father being head chief of the Six Nations Indians and her mother an English woman. Miss Johnson wrote swinging, imaginative songs of nature, such as The Song My Paddle Sings, and passionate lines upon the life and fate of her father's race, such as Red Men Die, and others. Her collected verse is entitled Flint and Feather. Shortly before her death, in Vancouver in 1913, she prepared a book of Legends of Vancouver.

Beatrice (Mrs. William) Redpath is one of the younger poets whose verse expresses strong personal feeling in the experience of human life. Her first vol-

ume, Drawn Shutters, was published in 1914. In the lines of Norah M. Holland are the humor, pathos and fairy lore of Ireland. Born and reared in Canada, this writer was a cousin of W. B. Yeats, Ireland's famous poet-dramatist. Grace Blackburn, known as a journalist under the pen name "Fanfan," had considerable originality of thought and expression.

Mrs. Isabel Ecclestone Mackay stood among those who must be grouped with both poets and prose writers, so we shall find her again among the novelists. Her verse is rhythmic and expressive. She produced charming poems for children. Six others well known in both fields—verse and prose—are Ethelwyn Wetherald, Jean Blewett, Katherine Hale, Virna Sheard, Florence Randal Livesay and Marjorie Pickthall. Most of them have high standing in journalism and have written fiction as well. All are poets. The chief characteristic of Miss Wetherald's verse is delicacy of touch. Mrs. Blewett sings of everyday life in a simple, natural way. Katherine Hale (Mrs. John Garvin), in her war poems and others, shows fine imaginative qualities. Mrs. Sheard writes with lyrical ease and grace. Louise Morey Bowman's Songs of the Common Day and Dream Tapestries give her a place as the chief modernist among the Canadian poets.

Most interesting and unusual is the work of Mrs. Florence Randal Livesay, whose Songs of Ukraina, translated from the Ruthenian, have a vital ring that seems to have been brought over unspoiled from the original. The feeling is true and intense. "The poet is he who sees"—sees with inner eyes that are not limited by time or space. Of that true fellowship of poets Marjorie Pickthall is undoubtedly a member. Her world is wide, and is brought before our eyes in words that shine with rich, full light. Miss Pickthall was born in England, but went to Toronto when but a little girl. In 1922, all too early, death claimed her.

Gertrude MacGregor Moffat is another woman poet whose work was cut short by death, in this case before any of her verses had appeared in volume form. The publication of her Book of Verses has been hailed with unanimous admiration, and Dr. MacMechan has declared that her work has unusual qualities. "What our [Canadian] literature lacks, as a rule," says Dr. MacMechan, "is passion; but Gertrude Moffat's poems are an exception. They were wrung out of her very heart."

Some Canadians who have written verse in French

French verse in Canada since the middle of the nineteenth century has several notable names. Octave Crémazie, with serious and vigorous patriotism, wrote of *Le vieux soldat canadien, Le drapeau de Carillon* and on other themes that aroused strong love of country in the hearts of his people. He and his brothers had a bookshop which became a meeting-place for the writers of Quebec. Pamphile Le May, too, wrote patriotic lyrics. In 1870 he published a translation of Longfellow's Evangeline, and in 1908 he produced *Champlain* for the Quebec tercentenary.

The greatest of Canada's French poets is Louis Fréchette, two of whose works, *Les fleurs boréales* and *Les oiseaux de neige,* were crowned by the French Academy in 1880. In 1887 the same honor was given to his epic of French Canadian history, *La légende d'un peuple.*

Alfred Garneau, son of the great historian, was master of a subtle and delicate poetic art. Among the younger poets, Émile Nelligan, Albert Lozeau, Paul Morin and René Chopin may be considered representative.

In turning again to the writers of prose we shall think for a moment of two men—not Canadians—whose minds were so devoted to the study of Canada and her history that they cannot well be left out of account. One was Goldwin Smith, Englishman and "ripe Oxford scholar," who lived in Toronto for about forty years, editing magazines and writing many essays on public questions. He gave to the national literature help of a solid and useful sort. Through his influence and aid it settled into more definite lines. He died in 1910 at his home, The Grange, which, through his generous thought has become Toronto's art gallery. The other writer was Francis Parkman, the American historian, in whose books La Salle, Count Frontenac and many other figures of New France live again.

A French writer, at this same time, was using for his novels themes borrowed from the early history. His name is Joseph Marmette. In *François de Bienville* and *L'Intendant Bigot* he described the old scenes with charm, and made the stories dramatic with lively dialogue. He died 1895.

THE NEXT STORY OF LITERATURE IS ON PAGE 5367.

The two Mauritius stamps on the left were sold for $9,331.20. The Hawaiian stamp was bought for $3,402, and the Moldavian stamp next to it for $1,336.50. The British Guiana stamp on the right realized $2,430.

A COLLECTION OF STAMPS

THE collecting of various kinds of used postage stamps is a hobby that is both interesting and instructive. Then, too, a fine collection containing hundreds, and perhaps thousands, of stamps is a thing of artistic beauty, for many of the stamps issued by different countries have artistic designs and are beautifully engraved. Let us think for a moment of some of the things which we may learn from a collection of stamps.

In the first place, we shall get to know a great deal of geography in a very pleasant way. The sorting-out of our stamps into their various countries will fix in our minds a great deal of geographical knowledge.

Then, in the second place, we shall get to know a number of foreign words. There are the names by which the different countries are known in the countries themselves, and the coins of the various lands as represented by the values set forth on the stamps. We shall also learn much history from our postage stamps, for it has become the custom in many countries to enlarge the size of the stamps and to place on them various scenes and incidents in the history of the country.

These three stamps, a Spanish, a West Australian and an Indian, are worth $6,075, because, in printing, parts of the designs were by accident turned upside down. The correct issues are worth only a few cents.

Further, we shall get to know what some of the countries are like, for many of the stamps have pictures of cities or mountains or other scenes in the countries. Finally, we shall learn the emblems of many of the lands from the stamps, as, for instance, the cross of Switzerland.

The number of stamps now in existence, especially since the World War, is so enormous that many collectors confine themselves to some section, such as the British Empire, or the stamps of a particular continent, such as Europe or America. Some who can afford the rarer ones do not collect stamps later than a certain date, and so on.

Stamp-collecting is a hobby that need cost nothing, and yet may cost thousands of dollars. There are some rare one-cent and two-cent stamps which can now only be purchased for about $4,860 each. A collection like one in the British Museum is estimated to be worth over $486,000. But while this is the case, any boy or girl can begin collecting at once without spending any money.

The ordinary stamps that we use for our newspapers, letters and parcels will all be needed for our collection, so we can begin by getting good specimens of these.

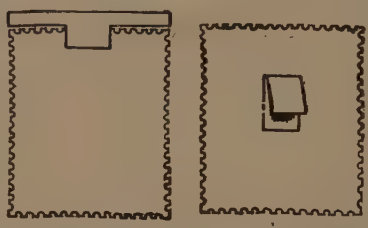
No doubt we have some friends in offices where foreign letters are received, and we should ask them to save us any foreign stamps they may not want. Then, perhaps we have friends abroad who could send us from time to time a batch of used stamps of the land they are in. In these ways we shall begin to form a collection for next to nothing.

But as we get interested in our hobby we shall be glad to spend some of our pocket-money in adding to our collection. Our earliest purchases can be inexpensive packets of stamps, and though we must not expect to obtain in this way any valuable specimens, we shall find that the cheap packets will, until our collection has attained a considerable size, constantly provide new varieties for us. The duplicates will come in useful for exchanging.

Of course, if we can afford them, the more expensive packets will contain more valuable varieties, and will fill up many vacancies in our collection. But we must be sure to buy these packets only from reputable dealers who are above suspicion, as forged stamps are sometimes found in them.

We should from the beginning set about our hobby in the right way. A mere mass of all kinds of stamps, without order or arrangement, is useless. We must endeavor to obtain complete sets of each particular issue of stamps. It will be easy to get the commonly used stamps, but when we come to the larger denominations these are less easy to obtain because so few are used. But we must not get discouraged. Sooner or later we shall find an opportunity of filling up the blank spaces in our collection.

As with the United States stamps, so with foreign ones. We should endeavor to complete our sets of different issues, putting the various values in their proper places and order. And this brings us to the question of how we are to keep and arrange our collection. There are many excellent albums sold with pages set apart for the different countries and places for the various stamps. They range in price according to their size, the quality of their binding, and so on.



Two different ways of fixing postage stamps to the pages of the album.

But it is not necessary to buy one of these ready-made albums. A plain, thick notebook will do, or two or three thinner books, and, as a matter of fact, it is much the better plan to make our own album. We should rule a border around each page, leaving a margin of about ½ inch all around. Then we should rule spaces to receive the stamps, and above each row we should leave about ¼ inch for a line stating the date of issue and other particulars.

There are different ways in which we can arrange the countries. Some put them in strictly alphabetical order; but a better arrangement is to divide the book, or the books, into divisions, as North America, South America, Europe, Asia, Africa and the like, subdividing these into their various countries in alphabetical order. You should leave the most room for your United States stamps.

As to the space that should be allotted to each country, this varies very much. Some countries, like Spain, which have produced a large number of issues, will need seven or eight pages, but for most states three or four pages will be sufficient. There are some countries, like Naples, that no longer exist as separate states and do not now issue stamps. One page will be sufficient to allow for each of these. It is better to use only one side of each sheet in the book, leaving the other side of the paper blank.

It is important to mount the stamps in the album properly. On no account let us gum or paste the whole of the back down on the page. This spoils the stamp, takes away from its value, and makes it difficult, if not impossible to remove the stamp from the album. There are two ways of fixing our stamps. We may make a little hinge of tissue-paper at the top, as shown in the first picture on this page, gumming only a small piece to the stamp itself; or we may double a little piece of paper and stick one part to the stamp, as shown in the second picture, and the other to the page. Either plan is good, and does no damage to the stamp, making it easily removable, though holding it securely. It is, of course, essential that we do not use a gum or paste containing any chemical that will damage the stamp.

Moisture spoils the color of a few stamps, particularly some Russian issues, but it is by moisture that we have to remove most stamps from the paper on which they are stuck; for stamps should not be put into the album while they have paper adhering to them.

To remove the paper take a saucer of water, slightly warmed, and lay the stamp on the water, face upward, taking special care not to wet the surface. The stamp will curl up and then straighten out again, when it should be removed, dried gently, first in a cloth and then between two pieces of blotting-paper. It is now ready for operating on, and with great care we should remove with a penknife the paper that sticks to the back. It is important not to damage the edge or perforation of the stamp in any way, as such damage greatly spoils the value of a stamp.

Some rare specimens would be worth hundreds of dollars less if their perforations were torn off.

Stamped envelopes—that is, envelopes which have the stamp impressed on them—and postcards, and newspaper wrappers, should be preserved complete, and the stamps should on no account be cut off.

As we make progress with our collection we shall probably put aside some of our pocket-money to buy single stamps that we need. There are many responsible dealers who issue catalogues, but we must be on the lookout for forged specimens, for there are many about, especially since the war. They can generally be recognized by their bad printing, and by the spurious postmark which is generally made to appear at one corner. Then many stamps have been reprinted from the old dies after the issue has ceased to be in circulation.

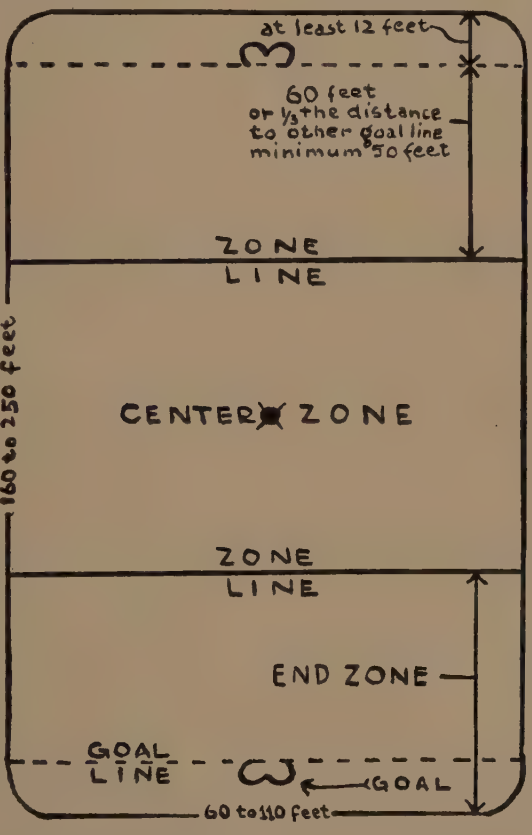
We may mention a few of the technical terms that are used by stamp-collectors and that we ought to know. An envelope stamp is a stamp printed on an envelope. An overprint is anything added after a stamp has already been printed. This is sometimes done to render it suitable for some particular use. Perforations are the little holes cut between stamps to enable them to be torn apart easily. A surcharge is a mark, or figure, or word, added to a stamp after it is printed to change its value. The watermark is a design in the substance of the paper, which may be seen by holding the stamp up to the light.

Finally, the proper name for the study of postage stamps is philately, and a stamp-collector is a philatelist.

SOME FAVORITE GAMES

ICE-HOCKEY

IN the Old World when they speak of hockey they generally mean field hockey, but on this continent ice-hockey is the popular sport. Every boy who lives near a skating-pond possesses a hockey-stick of some kind or other, and he is quite proud of the speed and skill with which it is played in his country. In 1920 Canada won the Olympic hockey championship at Antwerp and she has won it at every Olympic meeting since that time. The United States has come in second on each occasion. Many of us live in places where the winter is cold enough to provide good ice-skating, and with the first frost out come our skates and hockey-sticks and we want to know the rules which govern the game.



It is played on ice by teams of six men on each side, with a puck made of vulcanized rubber, 1 inch thick all through, 3 inches in diameter, and weighing not less than 5½ ounces and not more than 6 ounces. The players are as follows: goal-keeper, right defense, left defense, centre, right wing, left wing. Hockey-sticks shall not be more than 3½ inches wide at any part, and not more than 54 inches in length to the heel and not more than 15 inches long at the blades. In setting the rink the goals should be placed in the middle of each goal-line, and should consist of official goal-nets supported by two upright posts 4 feet high and 6 feet apart, and placed at least 12 feet from the end of the rink. A distinguishing line should be drawn on the ice between the centre of each goal-post. A goal is scored when the puck, entering from in front, passes between the goal posts, below the top of the net, and wholly across the Goal Line. If the goal has been made according to all the rules it counts one point for the team not defending the cage where it is made. In matches, an umpire at each goal informs the referee when a goal has been scored. The referee and, subject to him, an assistant referee, enforce the rules, decide disputes, control umpires and timekeepers and are in general charge of the game. The referee's decisions are final. The goal is tended by the goal-keeper, who may stop the puck in any position or manner he wishes, but shall not hold nor carry it on his person, nor sit, kneel or lie on it, nor throw it toward his opponents' end of the rink.

The game starts when the referee blows his whistle and then drops the puck between the sticks of two players (one from each team) whose right sides shall be toward their own end of the rink. The two players keep the blades of their sticks on the ice a foot apart until the referee drops the puck. No player is allowed to come within 10 feet of the two players facing the puck. After the "face-off" the game consists of dribbling, passing and shooting to drive the puck through the opponents' goal. After a goal has been scored the puck will be faced again in the centre of the ice.

A player may pass the puck to any team-mate in the same zone as the player at the time the puck left his stick, and he may pass to any team-mate in another zone nearer their own end of the rink. He may pass, carry or shoot the puck from his End Zone to the Center Zone, and any team-mate in the same End Zone at the time when the puck thus crosses the Zone Line may play the puck in the zone to which it was passed

A player may also pass, carry or shoot the puck from the Center Zone to the opponents' End Zone, provided no team-mate is in the opponents' End Zone. Any team-mate who was in the same zone or his own End Zone when the puck crossed the opponents' Zone Line may play the puck in the opponents' End Zone, but must withdraw immediately after the puck has left that zone.

The referees shall stop the play when a player touches the puck in any manner upon a pass from a team-mate, other than as outlined above, or when a player not in possession of the puck enters his opponents' End Zone before the puck does, or when a player passes, carries or shoots the puck into the opponents' End Zone.

In the case of any violation of this rule, known as the "off-side" rule, the puck shall be faced-off by the referee at the point where it

was last played, except that the face-off must be made at least 10 feet from the side of the rink. If the puck goes off the rink, it is faced 10 feet in from the point where it left the ice.

In playing the game the puck may be stopped with the hand, but not carried or held. No player is allowed to raise his stick above his shoulder or throw it along the ice, nor is any roughness, like charging, tripping, collaring, cross-checking, kicking or pushing permitted. The referee will rule off the ice, for any length of time in his discretion, a player who deliberately offends against the rules. If a player makes any unfair or rough play, or disputes any decision of the referee, or uses any abusive language, the latter may rule him off for the remainder of the game or for such time as he thinks wise, and no substitute will be allowed. If, further, a player deliberately commits a foul to prevent a score, the referee will not stop the game until the play has been completed.

Nine substitutes are allowed on each team during a match, and they may enter the game at the time of any break in the play. After such a change the puck will be faced again at the spot where it was last played.

With regard to the time: three 20-minute periods of actual play with 10-minute intermissions are allowed for matches, and goals are changed after each period. If at the end of an hour the game should result in a tie, the teams change goals and, after a 10-minute intermission, play an overtime period of 10 minutes. If the score should still be tied, another 10-minute overtime period is played after a 5-minute intermission. If then no goal has been made, the match is declared a draw.

The game is rapid and strenuous. It calls for strong skating, ability to make short stops and swift turns to the right and left, and good stick work. It demands endurance, swiftness of judgment and unselfish teamwork. To play well a boy must be fit and enthusiastic. There are few games which fill keen players and spectators with greater exhilaration.

Canadian hockey is the finest in the world. In skill, speed and strength, players from the Land of the Maple have yet to find their equals. In the Dominion, as in the United States, the game is played by both amateurs and professionals; there are many leagues of both, and the rules for the latter differ only in a few minor points. In match-play three timekeepers are appointed (generally by the referee) before the commencement of the game. They keep an accurate account of the time of games and penalties.

CURLING

"SCOTLAND'S ain sport," the roarin' game of curling, has been popular there for three centuries at least. At first very rude implements were used—random boulders out of the bed of a stream perhaps, which were bored through to let in the thumb of the player. In the course of years the rough block was succeeded by a beautifully rounded and polished object of whinstone or granite supplied with a convenient handle.

Wherever Scotsmen have journeyed they have taken their game. In Canada curling has been known since 1807 and is to-day played from the Pacific to the Atlantic and from the international boundary to the Yukon. It was introduced into the United States in the early Forties, and some twenty years later the Grand National Curling Club was formed. The members used on frosty afternoons to gather for a couple of hours' bonspiel on a stretch of water in New York, running where Canal Street now stands. The spread of the city drove the curlers farther north, and all the big matches now take place in Van Cortlandt Park. In the Canadian Northwest the sport is controlled by the Manitoba Association, which consists of over a hundred curling clubs. In Winnipeg every winter there is a monster bonspiel and curlers come from East and West. In the early days of Scotch settlers in the West, men curled with wooden blocks which were soaked in water for months and then allowed to freeze hard. Iron "stones" are sometimes used in Quebec as being less affected by change of weather. For the most part, however, granite stones which have been quarried are played with, and these are named after the places whence they come, Ailsa Craigs, Burnocks and Crawfordjohns being some of the best-known varieties.

Perhaps you have watched your father or uncles curling? The game is very much like bowls played on the ice. The rink is marked out on the ice, which should be hard and smooth. To keep it swept every curler carries a broom and good "sooping," or sweeping, is a part of the curler's art. It is practiced subject to strict rules and under the direction of the "skip," or captain, and you can see how the progress of a stone might be otherwise arrested by the ice-dust caused by the play. Apart from the broom the roarin' game requires no other implement than the stone, which must not weigh more than 47½ pounds, unless it is made of iron, when it must not be more than 70 pounds.

The rink measures 46 yards long and 10 yards wide. Each side has four players and each plays two stones. The "lead," or first player, takes his post on the crampit, hack or iron foothold, at one end and throws his stone as near to the tee as he can. Then the lead of the other side plays, and instructed by his skip will either try to drive away the first stone, if well placed, or get a better position for himself. When the skip's turn comes he is directed by another player. When all sixteen stones have been thrown the players cross to the other end of the rink, count the scores, and play the next "head," or inning, from that end.

If a stone does not cross the hog-score, it is a hog and is removed from the rink unless it has struck another stone lying over the hog. Stones that pass the back-score or touch the swept snow on either side are also removed. There is a great art in throwing the stone: by a cleverly imparted twist a stone may be made to curve round a guard and drive away a winner or find a good lie for itself. When the skip calls for "in turn" or "out turn" the good player is always able to respond and to make the stone curl against the natural fall or bias of the ice.

The sweeping is highly important. It is for a skip to say whether a stone should be swept or not. The players, other than the one playing his stone, should be always ready to sweep wherever directed to do so, and must

keep beside or slightly in front of the stone until it reaches the house (as the circle is called) if it goes so far. They should sweep with alternate strokes so as not to interfere with each other, and across the rink. They must not touch a moving stone with their brooms.

When chittering birds on flickering wing
About the barn doors mingle,
And biting frost and cranreuch cauld
Drive coofs around the ingle,
Then to the lochs the curlers line,
Their hearts as light's feather,
And make the tee wi' mirth and glee,
In cauld, cauld, frosty weather.

LACROSSE, THE NATIONAL GAME OF CANADA

WHEN the white man and Indian came into contact upon this continent each found much to interest him in the other's ways. Modes of living and fighting were very different, but means of enjoyment and recreation had points of resemblance. Men hunted in the New World as in the Old; they danced and "magicked," they played games, they feasted and held great councils. The weapon and the measure, the implement and the fare may differ, but, in the main, man the world over takes his pleasure along similar lines. It is for this reason that many of the games which we play to-day have come down to us from far-distant times and such diverse races.

The first settlers found the Indians of many tribes playing a game with a curved wooden stick and a rude ball made of hide stuffed with hair, a piece of bark or the knot of a tree. As many as six hundred to a thousand men participated, and the game was taken so seriously as to be prefaced by a ceremonial dance. The goals were sometimes rocks or trees, sometimes a single or a double pole. They were placed from five hundred yards to half a mile apart with practically no side boundaries. When the dance ended, the ball was tossed in the air and the two sides rushed to catch it on "crosses" similar to those used now. According to local custom the ball had to pass a rock, strike a pole or pass between the poles. The medicine-men were umpires, and the players decked in paint and feathers were urged to further desperate effort by the squaws, who beat them with sticks.

The early French settlers became much interested, and the name "lacrosse" was given to the game because of the curved stick with which it was played. A piece of treachery, which recalls the early days of Rome and the theft of the Sabine women, was committed by the tribe of Ottawas under cloak of their favorite sport. In 1763 Chief Pontiac came to the British garrison of Fort Michilimackinac and invited the soldiers to attend a game of "bagataway." Now, the garrison was *en fête* to celebrate the birthday of their king, and, unsuspecting, the commander gave leave for his men to go. During the game the Indians worked their way closer and closer to the gates; then suddenly from under their blankets the squaws produced tomahawks which the braves seized, threw away their sticks, rushed into the fort and massacred all save a few Frenchmen.

About a century later, shortly after Canada became a Dominion, lacrosse was recognized as the national game, and the National Lacrosse Association of Canada was formed. Canadian and Indian teams visited England and made the game popular there, and sometime during the early Seventies it was introduced into the United States, where it is played mostly by colleges.

The rules are not difficult. The crosse, usually 5 or 6 feet long, must not be more than 1 foot wide. It is crooked at the end so as to allow of a loose net of catgut to be stretched across it. The ball of solid rubber weighs 6 ounces and should measure 8 inches around. Goal-posts consist of two poles 6 feet from the ground when set up and joined by a cross-bar. A netting extends back of the goal-posts for 7 feet, where it is pegged to the ground. The goal-posts should be placed 110 or 125 yards apart, and a goal-crease marked in white chalk, 12 feet square. The goal-crease is important because only a player who has the ball may enter it, for the purpose of scoring a goal. No player is allowed inside merely for checking. A goal is scored when a player puts the ball in the goal net from the front. The goal-keeper, while defending his goal within the crease, although not allowed to catch and throw with his hands, may put away with his hands or block the ball with his stick or body.

Twelve players make up each side. They are as follows: goal-keeper, point, coverpoint, first defense, second defense, third defense, centre, third home, second home, first home, outside home and inside home. In each position save that of goal there are two men, one on each side, whose duties are to mark and neutralize one another's efforts.

The game is started by the referee's placing the ball in the centre of the field, between the sticks of the players facing, the players having their left side toward the goal they are attacking. At the word "play" the crosses are drawn in toward the holders of them. The ball comes to one or the other, and the players of the two teams at once begin a struggle for the possession of the ball. When scooped up from the ground it is carried horizontally on the stick, the player running toward one of the goals, and endeavoring to elude his opponents, being helped on by his own team.

Although the ball may be thrown for a long distance, long throws are not often tried, it being generally better for a player to run with it until he can pass it to a member of his side, who proceeds with the attack, either by running, passing to another, or trying to throw the ball through the opponents' goal. There is no off-side, and a pass may be made to front, side or rear. No player may charge another, touch the ball with his hands, persistently throw the ball out of bounds or strike or trip another player with his crosse.

The playing time of a match is divided into four periods of 20 minutes each, actual playing time, ends being changed at the conclusion of each period. A ball out of bounds must be "faced" at the nearest point where it left the bounds, and all the players must remain in their places until the ball is faced. The ball, however, must not be faced closer to the goals than 10 yards in any direction.

A free throw is given for a foul. By a "free throw" is meant that the player fouling and the one fouled are placed in the same position as they occupied immediately previous to the foul, the player fouled having the ball on his crosse. At the word "play" each is allowed to move in any manner allowed by the rules of the game.

CRICKET

CRICKET is played with bats, ball and wickets by two sides of eleven players each. The batsman defends his wicket against the ball which is bowled by a player of the opposing side, and the other players of this side are stationed about the field in order to catch or stop the ball. The score is reckoned by runs and the side which scores the greatest number of runs wins the match. Each side has two innings taken alternately.

In the centre of the field the wickets are pitched opposite to each other and 22 yards apart. A wicket consists of three stumps of wood so pitched that with the space between them they cover 8 inches; on the top of the stumps are two light wooden bails. A bowling-crease is marked on the turf on a line with the stumps 8 feet 8 inches in length. Beyond this line the bowler must not pass when delivering the ball. Four feet in front of the stump is marked the "popping-crease" which is the batsman's domain.

Captains of the opposing sides toss for choice of innings. The team which bats first sends two men in, one to each wicket, and generally chooses men with strong defensive powers and good nerve. Then follow the most brilliant run-getters, and the weakest batsmen go in last. The other team sends a bowler to one end and a wicket-keeper to the other and disperses the other nine men about the field in such positions as the kind of bowler and kind of batsman seem to require. The umpire then calls "play" and the bowler bowls from the end opposite the batsman. If it is a ball which the batsman can reach, he either blocks it or hits it to some part of the field. If he thinks he can run to the opposite wicket, the other batsman changes places with him and a run is scored.

The bowler bowls generally six balls consecutively from one end, then a different bowler bowls one over from the opposite end. At the end of every over the fields "change over." An over from which no runs are made off the bat is called a "maiden."

There are nine ways in which a batsman may be out. The following five are the most important.

1. Bowled out, if the bowler when bowling hits the wicket and dislodges the bail.

2. Caught out, if the ball after touching his bat or hand is held by any other member of the other side before touching the ground.

3. Stumped out, if the wicket-keeper dislodges the bail with the ball when the batsman is "out of his ground."

4. Out leg before wicket, if he stops with any part of his person, other than his hand or arm below the elbow, a ball which the umpire thinks would have hit his wicket.

5. If a bail is dislodged by the ball sent in by a fieldsman when neither batsman is in the popping-crease or has his bat in the crease, the nearer of the batsmen to the wicket so put down is "run out."

A batsman may also be out if he hits his wicket, handles the ball, hits the ball more than once with intent to score, or obstructs the field. Besides runs made by the batsmen there are "extras" consisting of "byes," "leg-byes," "wides," and "no-balls." The two former are run out if the ball goes past the wicket-keeper, the two latter are given by the umpire. A wide is when the ball passes the batsman beyond the limit of his bat; a no-ball is when the bowler delivers the ball without having either foot behind the bowling-crease, or if he jerks or throws the ball instead of bowling it. A bye is a run made off a ball which touches neither the bat nor the person of the batsman; a leg-bye is made off a ball which, without touching the bat or hand, touches any other part of his person.

One of the first things a boy must learn is to play with "a straight bat" when defending his wicket against straight balls. A beginner as a rule holds the bat sloping outward from the handle to the point, and then the rise of the ball is apt to carry it clear of the blade. Then his next concern is to calculate accurately the pitch of the ball. The bowler will try to pitch the ball too far for the batsman to reach out to meet it at the moment it touches the ground or immediately it begins to rise. He will, furthermore, pitch it too near the batsman for him to wait till after it has reached its highest point before playing it. The batsman then is compelled to play the ball in the middle of its rise and is apt to miss it or send it up in the air with the danger of being caught out. The bowler tries to pitch balls too short for safe forward play and too long for safe "playing-back." The batsman plays forward or back as his judgment tells him, and is ready when he receives a bad-length ball or one safely wide of the wicket to hit it clear of the fieldsman. A cricket bowler does not throw the ball as a baseball pitcher does. A cricket ball is "bowled" with a straight arm.

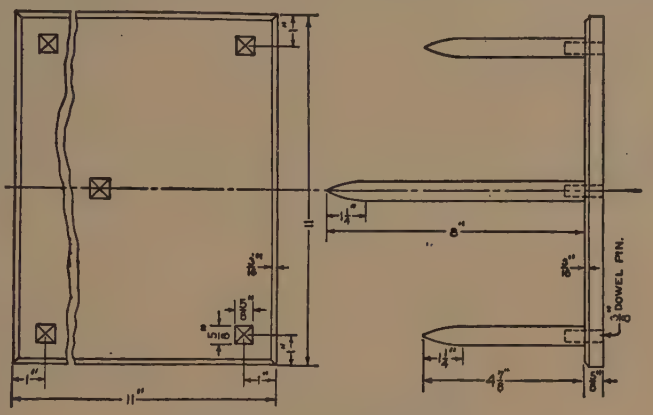
THE INK-AND-WATER TRICK

A LARGE glass jar containing apparently several pints of ink is placed on the table. A small quantity of ink is taken out with a ladle and is handed round to the company to satisfy them that it really is ink. A handkerchief is then thrown over the jar, and upon being instantly withdrawn, reveals the glass now full of water. The trick is thus performed: A black silk lining is placed inside the jar, and kept in its place by a wire ring. It forms a bag without a bottom, and, when wet, clings to the glass in which is the water. The next part of the deception is the ladle, capable of containing as much ink as will induce the audience to believe that it was got from the jar. The ink must be concealed in the handle of the ladle so that when it is lying on the table it will not be seen, but on being elevated, it must run into the ladle through a small hole made for the purpose. The black silk is withdrawn at the time the handkerchief is removed. It must be concealed within the folds of the handkerchief.

HOW TO MAKE AND PLAY RING-TOSS GAME

RING-TOSS is a fascinating indoor game for boys and girls who enjoy testing their skill by tossing rings. It is easily made from the lumber of an old box, some bright-colored paints, and several wooden embroidery hoops or rubber rings from preserving jars.

First secure an old box which has solid ends. From this choose one end that is free from knots. Then plane all faces so as to remove all mill marks, and to bring the stock to the size called for on the working drawing. The five pegs are made from the stock of another piece of the box. Pyramid-shaped points may be made on the pegs, or you may taper the pegs slightly and make a rounded point as shown. Draw diagonals on the square end of each peg and bore a hole for a ⅜-inch dowel pin. The pin is to be glued in the peg and should extend a distance equal to the thickness of the baseboard. While the brace and bit are out for the pegs, lay out and bore the holes in the base. These should go entirely through the piece, but care should be taken not to split the wood on the under-side.



Working drawing of ring-toss board.

As soon as the game is finished, paint the game in bright-colored enamels. The values of the pegs can be designated with numerals cut from old calendars. These should be pasted on the base near the pegs.

The game is simply to toss the rings over the pegs. When only two persons are playing, two sets of rings may be used, one of colored rubber and the other of white rubber. Embroidery hoops, if used, may be painted in sets. Each peg is marked a certain number; as 5, 10, 25 and so on. The near pegs may well be the low numbers. By placing the board with a corner near and two sides angling, a short peg is made to stand farthest away and behind the centre tall one. The short peg may be given a higher value than any of the others. The person who first earns the designated score wins the game and is a ring-toss expert. To ring the pegs is not as easy as it looks.

This game can be played by teams of from two to five players a side. A certain peg on the board is assigned to a certain player on each team. Each player can count a score when he lands his ring on his own peg. If a ring lands on the peg of another player, it does not score, but it must remain there until the rings of all the players of both teams have been thrown. Players sometimes ring an opponent's peg purposely.

HOW TO MAKE A CONCRETE DRINKING-BASIN

THE chief advantage of the concrete drinking-basin or bowl as a receptacle for drinking-water for animals is that it will not upset. Also, it will keep the water cool and it will last indefinitely.

You need a kettle for the inside of the form, and a cheese-box for the outside, to cast a bowl for this purpose. First secure a kettle about 10 inches in diameter—a worn-out utensil will do. You can probably find one to answer your purpose in the neighborhood if not at home. Then get a cheese-box from the grocer. This will measure about 13 inches high and 15 inches in diameter. After removing the bottom of the box cut down the sides to a depth of approximately 7 inches, or so that it will be about 2 inches deeper than the kettle.

Next spread newspaper or wrapping-paper upon a cement floor or walk; then place the cheese-box upon it, and the kettle, inverted, in the centre of the box. The form will then be ready for pouring the concrete. You should make a concrete mixture of cement, sand and stone in the proportions of 1 part of cement, 2 parts of sand, and 3 parts of stone (fine crushed stone, or gravel). After mixing the dry materials thoroughly add enough water to make a fairly sloppy mixture.

Now pour the concrete into the form and tamp it down around the sides of the kettle and the box, with a stick. To cast smooth surfaces it is necessary to get the thin part of the mixture into all interstices, and this is done by pushing a trowel or knife around the surfaces, crowding back the coarse material and allowing the "grout" to flow in.

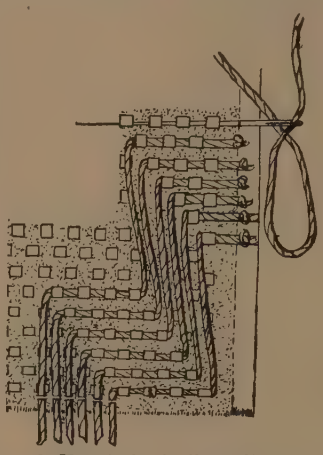
While you can set the bowl in the ground, the drinking-water will remain cleaner if the bowl is set so its top is 5 or 6 inches above the surface.

It would also be a good idea to insert a piece of ½-inch pipe through the bottom of the bowl and, before setting the bowl, dig a hole 2 or 3 feet deep and fill it with broken brick and stones. In this case the bowl should be fitted over the drain and the top of the pipe plugged with a wooden plug. When the water becomes dirty or stale you may remove the plug so the dirty water will flow into the drain.

A HUCKABACK TABLE-COVER

HUCKABACK! This sounds like a very peculiar word; yet it deserves respect because of its great age, and because it has history wrapped up in it. Centuries ago, long before there were stores within easy reach, hawkers, or "hucksters," used to tramp through England, Germany and the Netherlands, to sell in castle or cottage a kind of linen cloth much prized by housewives. The man with back bent under the burden of his pack they called the "huckster," or "man with bent back," and the linen he carried "huckaback." We still use huckaback for toweling, but it is now an inexpensive and durable material suitable for other purposes. It is useful as a cover for a table or stand and is also attractive as a pillow cover when worked with a pretty embroidery stitch.

When we buy it at the store we shall find there are several kinds, one white and rather thin, measuring 23 inches in width, and a thicker, rather cream-colored material, also 23 inches wide. Both have a little white square spot. It is this little white spot which makes it possible to use huckaback as a foundation for fancy-work, as we shall see.



1. How to begin the pattern.

Suppose we have a table for which we should like to make a pretty washable cover. We measure it to see what quantity of huckaback we shall need, allowing for a hem round the edge. That shown in picture 2 is a rather coarse cream-colored variety. At the same time we buy about 5 balls of embroidery silk, shading from light to dark, either in blue, pink, yellow or green, as fancy may dictate, to suit the general coloring of the room.

If we look at picture 2, we shall see that there are two rows for each of the five shades —ten rows altogether to form a series. We might use fewer colors: then the pattern would be smaller; or still more, when we should get the effect of wider bands.

The method of obtaining the up-and-down pattern is very simple. We thread a wool needle—choosing this for its large eye and blunt point—with a needleful of the darkest color, and make a knot at the end of the thread. We start with this through the selvedge at the ninth row of white squares up from the bottom right corner of the cloth, and take one stitch to the left, as shown in picture 1. Then, omitting the three squares below, we pass the needle under the fourth and take up four squares on the needle, as though we were darning. If we have forgotten how to darn, we should look at page 3857. The thread is then stitched through and cut off about 1 inch from the end. Keeping the same colored thread, we start the next row with the square in the second row from the selvedge, and proceed to follow the course of the first thread along the squares beside it. If we remember always when we have once passed the irregularity of the first corner that we take up four squares on the needle, then miss the three squares below and start with the fourth, we shall find the pretty wavy pattern shown in picture 2 growing under our fingers. This illustrates the general effect of the work on a small portion of the cloth, not at a corner. Thus we see the work is simplicity itself, and can be done very rapidly. When all the surface of the huckaback is covered with the thread, the edges with the loose ends are neatly turned over and hemmed in on the wrong side. A fringe or lace edging of the same color as one of the balls of embroidery silk makes a dainty finish to the table-cover; or, as embroidery silk is much used for crocheting, we may like to crochet an edging with it. A pattern with a pretty point would be most suitable; or, one might prefer a fancy scalloped edge.

2. The general effect of the pattern.

It is possible, by working very short rows, say, two or three waves wide only (that is, with fewer colors), to make a border and leave the greater part of the huckaback uncovered. Again, with a little ingenuity, we can easily contrive many kinds of patterns—squares, diamonds, stars—and even outline figures and landscapes. But if anything of this kind is attempted, the huckaback should have a very clear and prominent pattern, otherwise the counting of the squares will prove most tedious work and will be very trying to the eyes. In fact, all work of this kind should be done on coarse material.

There are other uses for huckaback worked in the way here described. It can suitably be made up into handkerchief-sachets, shoe-bags, nightdress-cases, comb-bags, sideboard-cloths, and covers for tables, and one of the greatest advantages for all articles in daily use is that huckaback washes perfectly and wears very well, and in addition to this is quite inexpensive.

THE NEXT THINGS TO MAKE AND TO DO ARE ON PAGE 5199.

THE MAID OF SARAGOSSA

FROM early spring to late autumn had the French soldiers been swarming over the Pyrenees. Murat had come to Spain, and the great Napoleon himself had followed, to work his will on the throne of Spain and to make his brother Joseph king of the country. Napoleon, however, had not counted on the most important thing of all, the national spirit of patriotism among one of the fiercest peoples of Europe, and he found the whole country up in arms against him, unorganized and without discipline, it is true, but the spirit of hatred for the foreign invader was more than he could crush with one blow.

In the summer the French troops besieged Saragossa, and a terrific contest ensued. On August 2, 1808, feigned attacks were delivered at two of the city's gates, and an avalanche of shells was directed from a powerful battery, called San Engracia, against a convent of that name, slaying all the defenders, and rendering it powerless. An envoy from the French general brought the following message to Don José Palafox, the commander of the town. "Headquarters, San Engracia. Surrender." He replied as briefly: "Headquarters, Saragossa. War to the knife." The citizens supported him, declaring: "We will defend ourselves to the death, and perish rather than surrender." Then the terrible hand-to-hand conflict went on. Barricades were erected, and the Spaniards defended their town with such a will that, before eleven days had passed, the French withdrew, disheartened by their terrific losses.

Glad of the respite, the inhabitants set to work and refortified their city, preparing for the long siege that was sure to come. On December 20 the French army again appeared before Saragossa, and for two months another siege went on. But famine and fever were at work in the city, and the survivors were forced to make an honorable capitulation.

It was during this second siege that Augustina, better known as the Maid of Saragossa, won for herself a heroine's fame. Her lover had fallen in his battery, and she resolved to take his place. In the picture above we see her holding the lighted brand, about to start the fuse on the cannon. Don José Palafox, the commander of the city, and an Augustinian friar are pointing the gun which rests on the battlements of San Engracia convent. Many are the heroic deeds that the Maid of Saragossa performed in the siege, and her memory is honored in this city on the banks of the Ebro as much as that of Don José Palafox, the heroic commander of the city.

THE ELSIE TO THE RESCUE

THE Larchmont, a large side-wheel steamer with three decks and a capacity for immense loads of freight, left her dock in Providence at seven o'clock one midwinter night. She was bound for New York and carried a heavy cargo and scores of passengers.

A strong northwest wind was blowing as the craft plowed her way down through the eastern passage of Narragansett Bay, but the full effect of the gale which was blowing out in the Sound, was not felt until the Larchmont rounded Point Judith. Then the side-wheeler pointed her nose full into the icy blast, and continued down through Block Island Sound without any unusual incident until she was well abeam of Watch Hill and within five or six miles of Fisher's Island.

The captain, who had remained in the pilot-house until the vessel had straightened out on her course, took a final turn around the vessel to see that all was well. Satisfied with his inspection, he was preparing to retire when he heard the pilot blow a number of sharp, short blasts on the whistle, the usual warning of danger. He hurriedly redressed and rushed into the pilot-house, and the pilot and the quartermaster pointed out a three-masted schooner bearing down upon them under the strong wind.

The pilot told the quartermaster to put the wheel hard aport, and the latter, keeping his head, did as he was ordered. As the Larchmont was slowly veering round in response to her helm, the schooner came rushing on and even before another warning signal could be sounded on the steamer's whistle, she crashed into the port side of the Larchmont.

The impact of the vessels was so terrific that the big bow of the sailing craft ate its way through more than half the breadth of the Larchmont. When the force of the impact had been spent, the schooner temporarily remained fast in the vitals of the steamer, holding in check for a moment the inrushing waters. Then the pounding seas separated the two boats and the flood poured in. Almost at the same time one of the steam-pipes on the Larchmont burst, and clouds of steam broke forth, adding to the confusion. The engine stopped suddenly and the vessel began to fill with water.

The passengers, startled from their sleep by the shock of the collision, rushed to the decks. Few even waited to clothe themselves. Their fear was so great that the first penetrating blast of the gale was disregarded. When suffering from the elements became intense, it was found impossible to return below for clothing. The staterooms were flooded, and the steamer, floundering around in the big seas, was sinking rapidly.

The captain promptly ordered every one to his post and gave additional orders that the boat crews should go to their stations, make the boats ready and swing them for instant use. There were eight boats and four life-rafts on the Larchmont. No other steamer was in sight that could aid the stricken vessel, so the order was given for the passengers to jump into the boats. Men and women bumped into each other, struggling for a chance of safety. Once the boats were cut away, the pitiable condition of the passengers and crew was increased rather than lessened. Every wave sent a dash of spray over the boats, and soon a thin coating of ice enveloped everyone. Even those—and they were few—who were fully clothed suffered from frozen faces and numbed feet.

Fisher's Island, the nearest land, was nearly five miles westward of the spot where the collision occurred, and every boat at once tried to head for that place. But the boats were heavy and the men at the oars weak. A fierce gale blew on their backs as they strained at the ice-covered oars in their endeavor to make land. The boats and rafts soon became separated.

As the Larchmont slowly settled, thirty of the passengers and half a dozen of the crew who could not get into the boats gathered on the hurricane deck, the highest part of the vessel. When the steamer went down, this deck with its human freight was ripped from the hull by the wind and tossed into the raging sea. The temperature was rapidly falling below zero, and the raging, icy waves swept over the huddled group on the raft until at last only eight exhausted, half-frozen survivors clung to the wreckage.

In the meantime one of the boats from the Larchmont with a few survivors in it had reached Block Island, and news of the disaster spread. Many of the islanders volunteered to do battle with the surf on the rocky shores in the chance of rescuing any survivors who might drift in in boats or on pieces of wreckage. Some of the fishermen actually set out in the gale toward the scene of the disaster. Among these were Captain John W. Smith and seven other daring men.

For hours his little boat, the Elsie, fought its way into the ocean, until her decks and rigging were covered with ice from the seas that swept over the bow. At ten o'clock they sighted the raft and saw that its occupants were feebly signaling for help. Try as she would, the Elsie could not get near the raft. At last four of the fishermen climbed into the dory that the Elsie was dragging in tow, and though drenched by the icy spray until they were numb, they fought their way to the raft and lifted into the dory eight scarcely living forms, whose clothing had frozen upon them.

After two more awful hours the Elsie reached land with everyone on board almost helpless from the cold. One of the rescued died from the exposure of that horrible night, and all the crew of the Elsie were frost-bitten, though none was permanently disabled.

Each of the fishermen who had been engaged in the rescue of the survivors of the Larchmont was awarded a gold medal by the Carnegie Hero Commission, and the education of their children was provided for from the funds controlled by that organization, which had been established in the year 1904, for the purpose of giving recognition and honor to those who perform such deeds of heroism.

A BRAVE GIRL

ONE bright spring afternoon, a party of young people was rambling through the woods of Pennsylvania. The warm air rang with chatter and laughter as they wandered here and there picking flowers. Soon they began to separate into little groups, according as flower-gathering, bird-hunting or other tastes directed them. They had arranged to meet for a picnic supper at the stream just below Rock Falls and in the meantime felt free to roam as fancy led them. The voices grew more distant, sometimes a laugh rang out, sometimes the snap of a dry branch was heard, but the woods were becoming as silent as they had been before the invasion, when a startled cry broke sharply upon the stillness.

Its note was so keen and anxious that as many of the party as heard it came running from various directions toward the spot whence the cry sounded. They found one of their number, who had been seeking a special fern, said to grow among the rocks in that locality, holding his arm—a horrified expression on his face.

"What is it?" inquired the first comers anxiously, and new arrivals repeated the inquiry, till an excited, chattering group collected on the spot.

In a momentary lull a low rattle was heard in the underbrush, and it seemed to loosen Billy's tongue.

"Look out!" he cried, half beside himself. "The snake! He has bitten me!"

The peculiar humming noise increased in intensity and pitch, and a chorus of shrieks and terrified exclamations broke from the girls, but the boys plunged into the bushes and killed the rattlesnake. Before they returned, one of the last of the party to arrive upon the scene, a brisk, capable young woman of twenty, took command of the situation.

"Here, Billy," she said, "take off your coat."

Half dazed with fear, Billy mechanically obeyed.

Then Mary Benton seized his shirt sleeve, and without waiting for knife or scissors, took it in her teeth and slit the sleeve to the shoulder. Close to the elbow, in the fleshy upper part of the boy's arm, the two small marks of the rattler's fangs showed red and angry. Mary looked at them without flinching, but the other girls began again their excited exclamations; and Billy's eyes wandered piteously around the group.

"What are you going to do, Mary?" sobbed one of the girls hysterically.

"Wait and see. And, for goodness' sake, be quiet, or go away," returned the other shortly, for there was no time to lose.

Bending over the boy, she tied a handkerchief tightly around the arm above

the bite, applied her lips to the wounds and sucked out the poison. While she was giving all her mind to this, some of the boys went off to get the team hitched up to the cart in which they had come. Calmed by her example and coolness, the girls were doing what they could to help, and two of them volunteered to run to the nearest farmhouse and telephone for the local doctor to meet the team. Mary nodded briefly.

"Tell him what's wrong," she said; then, after sucking the wound a while: "Come, Billy, that's all right. Put on your coat and we'll soon be home."

The team had gone only two miles when they heard the doctor's motor coming up the hill ahead of them. Quick questions, answered mainly by Mary, and a look of relief succeeded the anxiety on Dr. Maylew's face.

"It is your promptness that has saved Billy's life, Miss Benton," he said. "What is that on your lips? A fever blister? Did you know you were risking your own life when you sucked Billy's arm?"

Mary nodded meekly. She did not feel so brisk and commanding now that the need for prompt action was over.

THE BEAR HUNT

GOOMA was a little Hindu goatherd. All his life he had lived with his grandfather in the hills and all his knowledge was of the hills. Sometimes he wondered what life was like in the great beyond, and particularly in Simla, whose white walls he could descry in the sparkling light. Twice in his life—red letter days—he had seen a party of riders, English men and women, winding up and down the *nullah,* or valley, that lay beneath his home, filling the early morning air with their bright chatter. As the days came and went on the quiet hill slopes, Gooma sent out into the future long thoughts, always colored with the brilliance of that gay cavalcade.

One night he sat outside the hut, listening to the sound of an approaching horseman. Indoors his grandfather slept. Gooma walked out of the shadow and waited with a beating heart. Was something about to happen at last—something to vary the eternal silence of the hills and the monotony of service? The horseman stopped. Although of martial bearing, he wore ordinary riding clothes and was unattended.

"Do you live here, boy?"

Gooma salaamed his reply.

"What is your name?"

"Protector of the poor, my name is Gooma."

"Well, now, Gooma, would you like to join me in a hunt?"

Gooma trembled so much with excitement that he could scarcely speak.

"A hunt, sahib?"

"Yes, a hunt. A bear has been seen on the summit of the mountain."

At the word "bear" the light went suddenly out of the boy's face. His eyes hurriedly swept the starry sky.

"Well?" demanded the stranger sharply.

"It is not wise, Huzoor, to hunt the bear," faltered Gooma.

"Oh, is that it? I see you're afraid. I'll go alone."

"But, Huzoor," continued Gooma, with a deep reverence, "the bear is not abroad to-night."

"What makes you say that?"

"Protector of the poor, the keepers of the bear are elsewhere. The bear does not emerge without his keepers."

The Englishman laughed. At the sound Gooma's face became impassive, inscrutable. He looked straight before him down the *nullah,* where the crescent moon was rising.

"Rubbish!" the stranger muttered as he rode away. "I've run up against some of their precious ideas. I'll wait a night, anyhow."

Gooma stood until the sound of the hoofs was silenced. Then he sought his straw pallet and flung himself across it. It was the first time one of those mighty white men, those beings from another world, had spoken to him, and Fate had arranged it should be on such a subject. Why didn't the great soldier understand? The memory of the laugh cut Gooma's heart. He sobbed in the darkness.

Three nights afterward the great one reappeared. Gooma was in exactly the same spot. He rose and made a deep reverence. The man looked at him kindly.

"Well, have you changed your mind yet, Gooma?"

The boy made no reply.

"Will you come along and hunt the bear? I ask you because you know the hills better than anyone. I will pay you."

"I cannot! If the sahib would only understand!"

The man's kindness was almost more than Gooma could bear. Why couldn't the great war lords comprehend without so much talking?

"Come and sit out here in the good moonlight, Gooma, and tell me why you're so mighty afraid of the bear."

"The sahib would only smile."

"I shall do nothing of the sort. Go ahead."

Gooma looked doubtfully at his companion. The hunter glanced at him and smiled frankly.

"Go ahead," he repeated.

Gooma squatted, native fashion, and began his story. As he spoke, to hide his embarrassment he took up a stone and polished his knife—the sharp, curved knife of the hillman that he always carried.

"It is a very short story, Huzoor. Long, long ago, before the sahib's country was, the animals were very powerful, and they had an overlord to rule them, who was apt to be forgetful. He knew that the bear was sacred, but he let slip the thought from his mind, and the bear began to have many enemies. His food was stolen day after day, and at last the bear sent a complaint to the overlord by the kind little *serow*."

"*Serow!* What is that?"

"A *serow*, Huzoor, in the times that were, long, long ago, was a bit like an antelope and a bit like a goat and a bit like a donkey. He was good-natured, and so he set off to find the overlord. On his way, however, he met great and powerful enemies, and the poor *serow* was hard pressed, and cried out in the fight. Suddenly seven sisters, shining like moons, emerged from a wood close by and demanded the reason of the *serow's* cry. Having learned his story, they went on his way with him and found the overlord. The overlord listened to the seven shining sisters, and, as they were idle just then, gave them the particular power to guard the sacredness of the bear, here, on this very mountain. For many hundred years the seven shining sisters, shining like moons, Huzoor, guarded the bears on this hillside. Then came a period of great and terrible strife, when the gods were at war, one age passing to make room for another. The land was locked in blood, and many beings passed, never to return. Among the rest, the seven sisters fled to the safety of the sky, where they could watch the bear's interests. Look up beyond that jutting tree, sahib. There are the seven sisters."

"But," interrupted the hunter, "those are the Pleiades."

"Even so, Huzoor. And they guard the doings of the bear. It is unwise to raise the strife of ages, Huzoor. The seven sisters have ways of working their will."

The hunter glanced curiously from the sky to the impassive face by his side. There was a long silence, and then the Englishman mounted and rode slowly away, pondering.

"I'll keep an eye on that boy," he thought, "but in the meantime I fancy I'll hunt the bear without his permission."

Gooma watched many nights for the great lord to return. He shrewdly suspected that his story would not alter the hunter's decision at all. In Gooma's eyes, the man was dead already, and he was powerless to help. He could not disobey the tradition that had kept his race together for the sake of one man, however noble, of alien blood. The sahib would return, and would hunt, and nothing more would be heard of him. He was not the first. The mountain-top had always done its work well. Nevertheless, Gooma's brown eyes were very sad as he led his goats patiently up and down the slope morning and evening.

One night Gooma sat as usual in the shadow of the wall. He heard the horse's hoofs as the rider made a detour of the goatherd's hut. He knew. The sahib was riding to his death. Gooma tried not to listen, tried not to watch for the horseman to emerge from the trees that flanked the hill. He would have far to go up that lonely steep before he reached the usual haunt of the bear.

A sudden exclamation escaped him. He got up and ran outside the inclosure. Something was wrong. The hunter had dismounted. He could plainly hear in the dead stillness the dual sound of the progress. That was not wise, to dismount and walk leisurely in a track that the panthers occasionally chose for an evening stroll. A shot rang out, and then another.

In one minute Gooma fought the battle of his life. Should he go to the assistance of the white lord who was in the act of committing one of the greatest crimes in the Hindu calendar? He would never be forgiven by his own people. Then Gooma remembered the man's fine, brave face and soldier's courage. With a stifled prayer for forgiveness, he grasped his knife and ran. Up through the shrub tore his silent, bare feet. Somewhere death was being dealt. He sniffed the air, and a great joy flooded his brain. Whatever came, the bear was not about. The smell was not the smell of the dreaded one. He ran on and on.

He was just in time to see the terrible spring of a huge panther and the officer's shot that maimed but did not kill. Both man and beast went down in the shock. The hunter was face down, and the long lithe body was over him. Whistling through the air went Gooma's knife. It caught the glossy head, and a blood-curdling yell echoed and re-echoed through the peaceful valley. The panther rolled off his prey, and lay writhing in a death-agony. As Gooma rushed up, the hunter struggled, unhurt, to his feet. The sharp claws had only torn his coat. A revolver-shot silenced the cries of the great creature; and the sinuous form lay still.

In silence Gooma pulled out his knife from behind the dead beast's ear.

There was a pause, and then he spoke.

"So! Now the sahib must see the bear is defended."

Something stirred in the man's heart as he looked from the stiffening form a few feet away to the boy's faithful eyes.

"I'm going back, Gooma, but I shall not forget what I owe you. You shall enter my private service; is that not so?"

The boy burst into tears.

"Huzoor, I am thy faithful slave till death." Then a sudden thought struck him.

"The sahib will not want me to—"

"No, Gooma. Don't be afraid. I won't. You shall not hunt the bear!"

THE BIRD THAT NAPOLEON SET FREE

THERE is one trivial scene in the life of Napoleon which shows us a glimpse of his humanity.

Beaten by the great Duke of Wellington, that master Englishman who "gained a hundred fights, nor ever lost an English gun," Napoleon had ridden, haggard and helpless, into Paris. Early in those terrible hours he hurriedly closeted himself with a friend named Gourgand, and discussed with him what could be done. Should he surrender to the English or make his escape to America? While the two men argued in this terrible hour of panic and suspense, a little bird flew in at the open window. The excited Gourgand caught it in his hand.

"An omen of good fortune!" he cried. Napoleon looked at the poor, frightened bird captive in the hand of a man, and said, "Let it go free. There are enough unhappy beings in the world."

It was a touch of mercy. The mighty conqueror, who had hurled, without a tear, legions of men to destruction, could not bear in his terror to look upon the frightened bright eye of a little bird.

"Let it go free! Let it go free!"

THE DAUGHTER OF SIR THOMAS MORE

ONE of the crimes that will be remembered against King Henry VIII as long as the world lasts is the murder of his greatest subject and the noblest Englishman of that age, Sir Thomas More. And men chiefly remember this crime, perhaps, because they were told in childhood the story of Sir Thomas More's daughter, the beautiful and heroic Margaret Roper.

Sir Thomas More was the son of a judge, Sir John More, and while his father was yet living, the son was made Lord Chancellor. So he became his father's chief. But such was the noble nature of this man, that when on his way to court he encountered his father, he would kneel down before him and ask his blessing.

He was one of the greatest scholars of that day, and his stately house at Chelsea was always crowded with distinguished people anxious to hear his bright and wise conversation. His children and their children were ever close to him, but none was so faithful to him, so gentle and helpful in trial, as the lovely Margaret, wife of William Roper.

THE FAITHFUL DAUGHTER OF SIR THOMAS MORE CHEERED HER FATHER'S LAST HOURS

And when evil times fell, and for conscience' sake Sir Thomas More was thrown into prison, it was Margaret who proved his chief comfort. His wife did not understand him.

"Why do you live in this filthy prison with rats and mice," said she, "when you might sit at the king's right side and enjoy yourself at home?"

To which the great man replied with a smile: "I pray thee, good Mrs. Alice, tell me one thing—is not this house as near heaven as my own?"

Margaret understood him better, and cheered him in his disposition to defy the king. But her heart was near breaking. After his trial, when he had been condemned to death, this daughter broke through the soldiers surrounding him, flung her arms about his neck, and cried: "Oh, my father!—oh, my father!" And he laid his hand on her head and blessed her.

She parted from him only to return, once more flinging her arms impulsively about him, and kissing him with such an agony of affection that even the soldiers wept. And when she got home she received a letter from her father written in charcoal (for throughout his imprisonment he was denied the use of pen and ink):

"I never liked your manner better than when you kissed me last; for I am most pleased when daughterly love and dear charity have no leisure to look to worldly courtesy."

The head of this splendid man was set on a pole on London Bridge, but it soon vanished. No one knows how, but in some way Margaret Roper obtained it and the news soon got whispered that she was the thief.

Then was this gracious lady summoned to attend before the king's council, and there, unaffrighted, she owned that the head was in her possession. So noble was her manner in making this declaration that no man dared punish her, and she was allowed to keep the sacred relic. It was ever with her, and when she died it was buried in her arms.

This record of tender affection between a noble father and his noble daughter, a rare instance of true sympathy in mind and soul, is like a beautiful picture glowing on a dark page of history.

THE NEXT STORY OF GOLDEN DEEDS IS ON PAGE 5375.

FRENCH—THE FIRST DAY IN PARIS

First line, French; second line, English word; third line, as we say it in English.

C'est notre premier jour à Paris.
This is our first day at Paris.
It is our first day in Paris.

Nous nous réveillons de bonne heure.
We ourselves awake at good hour.
We awake early.

La bonne tire de côté les rideaux.
The nurse draws from side the curtains.
The nurse draws aside the curtains.

Elle dit: "Le jour est superbe."
She says: "The day is superb."
She says: "It is a beautiful day."

Nous faisons vite notre toilette.
We make quickly our toilet.
We dress quickly.

Puis nous descendons à maman.
Then we descend to Mamma.
Then we go downstairs to Mamma.

Nous avons du café au lait et des petits pains.
We have some coffee with the milk and some little breads.
We have coffee and rolls.

Nous avons bientôt fini.
We have soon finished.
Soon we have finished.

Nous voulons aller nous promener.
We wish to go ourselves to promenade.
We want to go for a walk.

Nous courons chercher nos chapeaux.
We run to get our hats.
We run to get our hats.

Nous rencontrons une petite fille.
We meet a little girl.
We meet a little girl.

C'est notre petite amie de la veille.
This is our little friend of the last evening.
It is our little friend of last night.

Nous disons tous: "Bonjour!"
We say all: "Good day!"
We all say: "Good morning!"

Nous disons que nous allons nous promener.
We say that we go ourselves to promenade.
We say we are going for a walk.

Elle dit: "Puis-je vous accompagner?"
She says: "May I you to accompany?"
She says: "May I go with you?"

Maman répond: "Oui, certainement."
Mamma responds: "Yes, certainly."
Mamma replies: "Yes, certainly."

Nous marchons vers les boulevards.
We walk toward the boulevards.
We go toward the boulevards.

Ils ressemblent aux parcs de Londres.
They resemble to the parks of London.
They are like London parks.

Le nom de notre petite amie est Julie.
The name of our little friend is Julia.
Our little friend's name is Julia.

Elle a une balle.
She has a ball.
She has a ball.

Nous faisons une bonne partie.
We make a good game.
We have a good game.

Il est presque l'heure du déjeuner.
It is nearly the hour of the lunch.
It is nearly lunch-time.

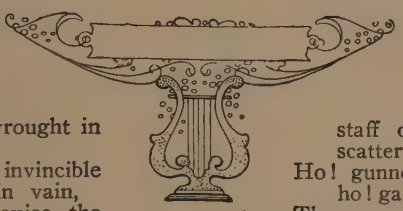
Nous devons aller chez nous.
We must to go to the house of us.
We must go home.

THE NEXT FRENCH STORY IS ON PAGE 5198.

LORD MACAULAY'S UNFINISHED POEM

YOU have probably read Horatius at the Bridge, one of the finest of Lord Macaulay's Lays of Ancient Rome, and remember the splendid martial strain of his poetry. The following fragment of what would have been a long and thrilling poem, had he lived to complete it, celebrates in the same spirited style an episode in English history as worthy to be remembered in poetry as any of the great events of ancient Rome. The phrase "treading the gay Lilies down" refers to the lilies which are the royal emblem of France; "semper eadem" is the Latin for "ever the same."

THE ARMADA: A FRAGMENT



ATTEND, all ye who list to hear our noble England's praise;
I sing of the thrice famous deeds she wrought in ancient days,
When that great fleet invincible against her bore, in vain,
The richest spoils of Mexico, the stoutest hearts of Spain.

It was about the lovely close of a warm summer day,
There came a gallant merchant-ship full sail to Plymouth Bay;
Her crew hath seen Castile's black fleet, beyond Aurigny's isle,
At earliest twilight on the waves lie heaving many a mile.
At sunrise she escaped their van, by God's especial grace;
And the tall Pinta, till the noon, had held her close in chase.
Forthwith a guard at every gun was placed along the wall;
The beacon blazed upon the roof of Edgecumbe's lofty hall;
Many a light fishing-bark put out to pry along the coast;
And with loose rein and bloody spur rode inland many a post.

With his white hair unbonneted, the stout old sheriff comes;
Behind him march the halberdiers; before him sound the drums:
His yeomen round the market-cross, make clear and ample space,
For there behooves him to set up the standard of Her Grace.
And haughtily the trumpets peal, and gaily dance the bells,
As slow upon the laboring wind the royal blazon swells.
Look how the Lion of the sea lifts up his ancient crown,
And underneath his deadly paw treads the gay Lilies down.
So stalk'd he when he turn'd to flight on that famed Picard field,
Bohemia's plume, and Genoa's bow, and Cæsar's eagle shield.
So glared he when at Agincourt in wrath he turn'd to bay,
And crush'd and torn beneath his claws the princely hunters lay.
Ho! strike the flagstaff deep, Sir Knight: ho! scatter flowers, fair maids:
Ho! gunners, fire a loud salute: ho! gallants, draw your blades:
Thou sun, shine on her joyously; ye breezes, waft her wide;
Our glorious *Semper Eadem,* the banner of our pride.

The freshening breeze of eve unfurl'd that banner's massy fold,
The parting gleam of sunshine kiss'd that haughty scroll of gold;
Night sank upon the dusky beach, and on the purple sea,
Such night in England ne'er had been, nor e'er again shall be.
From Eddystone to Berwick bounds, from Lynn to Milford Bay,
That time of slumber was as bright and busy as the day;
For swift to east and swift to west the ghastly war-flame spread,
High on Saint Michael's Mount it shone: it shone on Beachy Head.
Far o'er the deep the Spaniard saw, along each southern shire,
Cape beyond cape, in endless range, those twinkling points of fire.
The fisher left his skiff to rock on Tamar's glittering waves:
The rugged miners pour'd to war, from Mendip's sunless caves.
O'er Longleat's towers, o'er Cranbourne's oaks, the fiery herald flew:
He roused the shepherds of Stonehenge, the rangers of Beaulieu.
Right sharp and quick the bells all night rang out from Bristol town,
And ere the day three hundred horse had met on Clifton Down;
The sentinel on Whitehall gate look'd forth into the night,
And saw, o'erhanging Richmond Hill, the streak of blood-red light:
Then bugle's note and cannon's roar the death-like silence broke,
And with one start, and with one cry, the royal city woke.

At once on all her stately gates arose the answering fires;
At once the wild alarum clash'd from all her reeling spires;
From all the batteries of the Tower peal'd loud the voice of fear;
And all the thousand masts of Thames sent back a louder cheer:
And from the furthest wards was heard the rush of hurrying feet,
And the broad streams of pikes and flags rush'd down each roaring street.
And broader still became the blaze, and louder still the din,
As fast from every village round the horse came spurring in;
And eastward straight, from wild Blackheath the warlike errand went,
And roused in many an ancient hall the gallant squires of Kent.
Southward from Surrey's pleasant hills flew those bright couriers forth;
High on bleak Hampstead's swarthy moor they started for the North;
And on, and on, without a pause, untired they bounded still:
All night from tower to tower they sprang; they sprang from hill to hill;
Till the proud Peak unfurl'd the flag o'er Darwin's rocky dales;
Till like volcanoes flared to heaven the stormy hills of Wales;
Till twelve fair counties saw the blaze on Malvern's lonely height;
Till streamed in crimson on the wind the Wrekin's crest of light;
Till broad and fierce the star came forth on Ely's stately fane,
And tower and hamlet rose in arms o'er all the boundless plain;
Till Belvoir's lordly terraces the sign to Lincoln sent,
And Lincoln sped the message on o'er the wide vale of Trent:
Till Skiddaw saw the fire that burn'd on Gaunt's embattled pile,
And the red glare on Skiddaw roused the burghers of Carlisle.

GOD'S FOOL

Hate is the most repulsive thing in the world. We ought to see it in all its ugliness. In this sonnet Elliot Belestier, an American, pictures its deformity and folly.

I DREAMED one I had loved did me foul wrong,
Till with relentless hate my soul was spent;
When lo, the veil of mortal sight was rent
From all the universe, where weak and strong
Alike poured forth their voice in praiseful song,
Save only one—a motley clown, age-bent,
Vice-scarred, whose loathly, ghoulish look was lent
To his blank, idiot face by practice long.
A gaudy bauble in his hand he bore,
And to belabor angels vainly tried;
Each stroke, rebounding, smote the striker sore
A homing angel passed; to him I cried:
"What is yon fiend-faced clown, and what his state?"
"He is God's fool," he said; "his name is Hate!"

TO A MOUNTAIN DAISY

This beautiful poem, by Robert Burns, contains a few words of his native tongue which perhaps boys and girls may not understand. *Maun* means must; *stour*, dust; *wa's*, walls; *bield*, shelter; *histie stibble*, dry stubble.

WEE, modest, crimson-tippèd flower,
Thou'st met me in an evil hour;
For I maun crush amang the stour
Thy slender stem;
To spare thee now is past my power,
Thou bonnie gem.

Alas! it's no thy neebor sweet,
The bonnie lark, companion meet,
Bending thee 'mang the dewy weet
Wi' spreckled breast,
When upward springing, blythe, to greet
The purpling East.

Cauld blew the bitter-biting North
Upon thy early, humble birth;
Yet cheerfully thou glinted forth
Amid the storm,
Scarse rear'd above the parent earth
Thy tender form.

The flaunting flow'rs our gardens yield,
High sheltering woods and wa's maun shield;
But thou beneath the random bield
O' clod or stane
Adorns the histie stibble field,
Unseen, alane.

There, in thy scanty mantle clad,
Thy snawy bosom sunward spread,
Thou lifts thy unassuming head
In humble guise;
But now the share uptears thy bed,
And low thou lies!

AT SEA

There is a fine sense of the movement of a ship across the sea in this poem by Allan Cunningham, a Scottish author who lived from 1784 to 1842. He spent half his life in London, where he wrote a great deal about art.

A WET sheet and a flowing sea,
A wind that follows fast,
And fills the white and rustling sail,
And bends the gallant mast;
And bends the gallant mast, my boys,
While, like the eagle free,
Away the good ship flies, and leaves
Old England on the lee.

O for a soft and gentle wind!
I heard a fair one cry;
But give to me the snoring breeze
And white waves heaving high;
And white waves heaving high, my boys,
The good ship tight and free—
The world of waters is our home,
And merry men are we.

There's tempest in yon hornèd moon,
And lightning in yon cloud;
But hark the music, mariners!
The wind is piping loud;
The wind is piping loud, my boys,
The lightning flashes free—
While the hollow oak our palace is,
Our heritage the sea.

THE MEN OF OLD

Lord Houghton (1809–85) was famous as a patron of poets; eminent as a statesman; a great traveler; and no mean author, both in prose and verse. In this poem he celebrates the men of the past, whose lives were simpler than ours. It is true that "a man's best things are nearest him."

I KNOW not that the men of old
  Were better than men now;
Of heart more kind, of hand more bold,
  Of more ingenious brow;
I heed not those who pine for force
  A ghost of Time to raise,
As if they thus could check the course
  Of these appointed days.

Still it is true, and over-true,
  That I delight to close
This book of life self-wise and new,
  And let my thoughts repose
On all that humble happiness,
  The world has since foregone,—
The daylight of contentedness
  That on those faces shone!

With rights, though not too closely scanned,
  Enjoyed, as far as known,—
With will, by no reverse unmanned,—
  With pulse of even tone,—
They from to-day and from to-night
  Expected nothing more,
Than yesterday and yesternight
  Had proffered them before.

To them was life a simple art
  Of duties to be done,
A game where each man took his part,
  A race where all must run;
A battle whose great scheme and scope
  They little cared to know,
Content, as men at arms, to cope
  Each with his fronting foe.

Man now his Virtue's diadem
  Puts on, and proudly wears—
Great thoughts, great feelings, came to them,
  Like instincts, unawares:
Blending their souls' sublimest needs
  With tasks of every day,
They went about their gravest deeds,
  As noble boys at play.—

And what if Nature's fearful wound
  They did not probe and bare,
For that their spirits never swooned
  To watch the misery there,—
For that their love but flowed more fast,
  Their charities more free,
Not conscious what mere drops they cast
  Into the evil sea.

A man's best things are nearest him,
  Lie close about his feet;
It is the distant and the dim
  That we are sick to greet;
For flowers that grow our hands beneath
  We struggle and aspire,—
Our hearts must die, except they breathe
  The air of fresh Desire.

Yet, Brothers, who up Reason's hill
  Advance with hopeful cheer,—
Oh! loiter not, those heights are chill,
  As chill as they are clear;
And still restrain your haughty gaze,
  The loftier that ye go,
Remembering distance leaves a haze
  On all that lies below.

THE LOST DOLL

Charles Kingsley, the celebrated English clergyman, whose best-known prose writings are Westward Ho! and Water Babies, was also a poet. This little poem about the lost doll has charm and pathos. It teaches one of life's sweetest lessons—loyalty to that which has once been dear to us.

I ONCE had a sweet little doll, dears,
  The prettiest doll in the world;
Her cheeks were so red and so white, dears,
  And her hair was so charmingly curled.

But I lost my poor little doll, dears,
  As I played on the heath one day;
And I cried for more than a week, dears,
  But I never could find where she lay.

I found my poor little doll, dears,
  As I played on the heath one day;
Folks say she is terribly changed, dears,
  For her paint is all washed away,

And her arms trodden off by the cows, dears,
  And her hair is not the least bit curled;
Yet for old sake's sake, she is still, dears,
  The prettiest doll in the world.

THE SEED SHOP

This poem by Muriel Stuart shows with dramatic power how much poetry lies hidden in things that we, under the influence of custom, often regard as commonplace.

HERE in a quiet and dusty room they lie,
  Faded as crumbled stone or shifting sand,
Forlorn as ashes, shrivelled, scentless, dry,
  Meadows and gardens running through my hand.

Death that shall quicken at the call of Spring,
  Sleepers to stir beneath June's magic kiss,
Though birds pass over, unremembering,
  And no bee seek here roses that were his.

In this brown husk a dale of hawthorn dreams,
  A cedar in this narrow cell is thrust
That will drink deeply of a century's streams,
  These lilies shall make summer on my dust.

Here in their safe and simple house of death,
  Sealed in their shells a million roses leap;
Here I can blow a garden with my breath,
  And in my hand a forest lies asleep.

A NATION'S STRENGTH

These lines by Ralph Waldo Emerson express the pith of much philosophy; and the strange thing is that while all will admit the truth which the poet utters, they are few, indeed, who can bring themselves to shape their own conduct in accordance with it.

NOT gold, but only man can make
  A people great and strong—
Men who, for truth and honor's sake,
  Stand fast and suffer long.

Brave men who work while others sleep,
  Who dare while others fly—
They build a nation's pillars deep,
  And lift them to the sky.

THE STORMY PETREL

The Stormy Petrel ranges the ocean, hardly ever coming to land. It is a small bird, not much bigger than a lark, and, save for a few white feathers on wings and tail, sooty black in color. Sailors call it "Mother Carey's Chicken," and, partly because it is always busiest in stormy weather, skipping from wave to wave, and partly because of its color, look upon it as a bird of ill omen. This poem is by Barry Cornwall (Bryan Waller Procter).

A THOUSAND miles from land are we,
Tossing about on the roaring sea;
From billow to bounding billow cast,
Like fleecy snow on the stormy blast:
The sails are scattered abroad, like weeds,
The strong masts shake like quivering reeds,
The mighty cables, and iron chains,
The hull, which all earthly strength disdains,
They strain and they crack, and hearts like stone
Their natural hard, proud strength disown.

Up and down! Up and down!
From the base of the wave to the billow's crown,
And amidst the flashing and feathery foam
The Stormy Petrel finds a home,—
A home, if such a place may be,
For her who lives on the wide, wide sea,
On the craggy ice, on the frozen air,
And only seeketh her rocky lair
To warm her young, and to teach them spring
At once o'er the waves on their stormy wing.

O'er the deep; o'er the deep!
Where the whale, and the shark, and the swordfish sleep,
Outflying the blast and the driving rain,
The Petrel telleth her tale—in vain;
For the mariner curseth the warning bird
Which bringeth him news of the storm unheard!
Ah! thus does the prophet, of good or ill,
Meet hate from the creatures he serveth still:
Yet he ne'er falters:—so, Petrel! spring
Once more o'er the waves on thy stormy wing!

SORROW

We all have troubles, be they great or small, and it oftenest happens that that which hurts the deepest we shrink from uncovering to any human eye. This little poem by Alice G. Howard tells us that there is One to whom we may always speak.

THE sorrow that nobody mentions,
The sorrow no one may share,
Is the sorrow the dear Lord giveth
His sweetest, tenderest care.

He places His hand on the wellspring,
The quivering lips refrain,
And the eyes smile forth in defiance,
His love enfolding the pain.

He knows where the hurt is the deepest,
The tears of night and of day,
And, whispering softly, "I love you,"
Brushes the teardrops away.

The sorrow that nobody mentions
The sorrow no one may share,
Is the sorrow the dear Lord giveth
His sweetest, tenderest care.

GREAT NATURE IS AN ARMY GAY

Richard Watson Gilder, who was born in 1844 and became editor of The Century Magazine in 1881, was an American poet. The brisk idea of the opening lines is not maintained, and the reader soon begins to think that Nature's army, so far from being "gay," is an appalling host of ants or locusts that mean to devour everything in their path, leaving not a shred behind—not even the poor author of this poem.

GREAT Nature is an army gay,
Resistless marching on its way;
I hear the bugles clear and sweet,
I hear the tread of million feet.
Across the plain I see it pour;
It tramples down the waving grass;
Within the echoing mountain-pass
I hear a thousand cannon roar.

It swarms within my garden gate;
My deepest well it drinketh dry.
It doth not rest; it doth not wait;
By night and day it sweepeth by;
Ceaseless it marcheth by my door;
It heeds me not, though I implore.
I know not whence it comes, nor where
It goes. For me it doth not care—
Whether I starve, or eat, or sleep,
Or live, or die, or sing, or weep.
And now the banners all are bright,
Now torn and blackened by the fight.
Sometimes its laughter shakes the sky,
Sometimes the groans of those who die.
Still through the night and through the live-long day
The infinite army marches on its remorseless way.

NOVEMBER IN ENGLAND

This poem is an excellent example of the half-serious, half-jocular spirit in which Thomas Hood could write when the mood seized him. He was, of course, capable of serious and more enduring work, as in his Song of the Shirt on page 5710. This little ode to November voices a feeling of helpless despair. It was most likely written out of the fullness of his own experience of a November fog in London.

NO sun, no moon!
No morn, no noon,
No dawn, no dusk, no proper time of day;
No sky, no earthly view,
No distance looking blue,
No road, no street, no "t'other side the way";
No end to any Row
No indications where the Crescents go;
No top to any steeple,
No recognition of familiar people,
No courtesies for showing 'em.
No knowing 'em.
No travelling at all, no locomotion,
No inkling of the way—no notion,
"No go"—by land or ocean—
No mail, no post,
No news from any foreign coast;
No park, no ring, no afternoon gentility,
No company, no nobility;
No warmth, no cheerfulness, no healthful ease,
No comfortable feel in any member,
No shade, no shine, no butterflies, no bees.
No fruits, no flowers, no leaves, no birds—
November!

VENICE

This haunting description of the splendor of Venice is taken from Lord Byron's long poem, Childe Harold's Pilgrimage. Byron describes the decadence of the city, as he himself saw it, contrasted with its former glory.

I STOOD in Venice on the Bridge of Sighs,
A palace and a prison on each hand:
I saw from out the wave her structures rise
As from the stroke of the enchanter's wand;
A thousand years their cloudy wings expand
Around me, and a dying Glory smiles
O'er the far times, when many a subject land
Looked to the wingèd Lion's marble piles,
Where Venice sat in state, throned on her hundred isles!

She looks a sea Cybelè, fresh from ocean,
Rising with her tiara of proud towers
At airy distance, with majestic motion,
A ruler of the waters and their powers:
And such she was; her daughters had their dowers
From spoils of nations, and the exhaustless East
Poured in her lap all gems in sparkling showers:
In purple was she robed, and of her feast
Monarchs partook, and deemed their dignity increased.

In Venice Tasso's echoes are no more,
And silent rows the songless gondolier;
Her palaces are crumbling to the shore,
And music meets not always now the ear:
Those days are gone, but Beauty still is here;
States fall, arts fade, but Nature doth not die,
Nor yet forget how Venice once was dear,
The pleasant place of all festivity,
The revel of the earth, the masque of Italy!

BEATI ILLI

John Addington Symonds, a brilliant man of letters and a poet, who died in 1893, was very frail in health, but his writing always had a conspicuously manly strain that is well illustrated in the following verses. The meaning of the title is "Blessed are they," as in the Beatitudes.

BLEST is the man whose heart and hands are pure!
He hath no sickness that he shall not cure,
No sorrow that he may not well endure:
His feet are steadfast and his hope is sure.

Oh, blest is he who ne'er hath sold his soul,
Whose will is perfect, and whose word is whole,
Who hath not paid to common sense the toll
Of self-disgrace, nor owned the world's control!

Through clouds and shadows of the darkest night
He will not lose a glimmering of the light,
Nor, though the sun of day be shrouded quite,
Swerve from the narrow path to left or right.

SONG OF BIRDS

Longfellow here asks us to think about the joyous bird-song which is ringing round this world of ours. Somewhere, night and day, the birds are always singing.

DID you ne'er think what wondrous beings these?
Did you ne'er think who made them, and who taught
The dialect they speak, where melodies
Alone are the interpreters of thought?
Whose household words are songs in many keys,
Sweeter than instrument of man e'er caught;
Whose habitations in the tree-tops even
Are half-way houses on the road to heaven!

Think, every morning, when the sun peeps through
The dim, leaf-latticed windows of the grove,
How jubilant the happy birds renew
Their old melodious madrigals of love!
And, when you think of this, remember, too,
'Tis always morning somewhere and above
The wakening continents, from shore to shore,
Somewhere the birds are singing evermore.

THE PRINCESS

The following verses are the concluding lines of Tennyson's long poem The Princess.

THE woman's cause is man's: they rise or sink
Together, dwarf'd or godlike, bond or free;
For she that out of Lethe scales with man
The shining steps of Nature, shares with man
His nights, his days, moves with him to one goal,
Stays all the fair young planet in her hands—
If she be small, slight-natured, miserable,
How shall men grow? but work no more alone!
Our place is much: as far as in us lies
We two will serve them both in aiding her—
Will clear away the parasitic forms
That seem to keep her up but drag her down—
Will leave her space to burgeon out of all
Within her—let her make herself her own
To give or keep, to live and learn and be
All that not harms distinctive womanhood.
For woman is not undevelopt man,
But diverse: could we make her as the man,
Sweet Love were slain: his dearest bond is this,
Not like to like, but like in difference.
Yet in the long years liker must they grow;
The man be more of woman, she of man;
He gain in sweetness and in moral height,
Nor lose the wrestling thews that throw the world;
She mental breadth, nor fail in childward care,
Nor lose the childlike in the larger mind;
Till at the last she set herself to man,
Like perfect music unto noble words.

TRUTH, crushed to earth shall rise again:
Th' eternal years of God are hers;
But Error, wounded, writhes in pain,
And dies among his worshippers.

—WILLIAM CULLEN BYRANT.

NURSERY RHYMES OF CHILDREN OF FRANCE

The English version of these Rhymes appears side by side with the French.

C'EST la mère Michel qui a perdu
son chat,
Qui crie par la fenêtre à qui le lui
rendra,
Et le compère Lustucru, qui lui a
répondu:
"Allez, la mère Michel, votre chat n'est
pas perdu."
C'est la mère Michel, qui lui a de-
mandé:
"Mon chat n'est pas perdu! vous l'avez
donc trouvé?"
Et le compère Lustucru, qui lui a
répondu:
"Donnez une récompense, il vous sera
rendu."
Et la mère Michel lui dit: "C'est
décidé,
Si vous rendez mon chat, vous aurez
un baiser."
Le compère Lustucru, qui n'en a pas
voulu,
Lui dit: "Pour un lapin votre chat est
vendu!"

MOTHER MITCHELL one day lost
her pussy, alack!
And cried out of window: "Oh, who'll
bring her back?"
Then old Gaffer Lustucru smilingly
said:
"Your cat isn't lost—she is merely
mislaid."
Mother Mitchell cried, hopefully gazing
around her:
"My pussy not lost! Oh, pray, have
you found her?"
Then old Gaffer Lustucru answered her
pat:
"If you give a reward, you will soon get
your cat."
Said old Mother Mitchell: " 'Twould not
be amiss,
If you find me my pussy, to give you a
kiss."
But sly Gaffer Lustucru much preferred
gold,
And said: "As a rabbit your pussy is
sold!"

LA boulangère a des écus
Qui ne lui coûtent guère;
Elle en a, je les ai vus.
J'ai vu la boulangère aux écus,
J'ai vu la boulangère.

THE baker's wife has sacks of gold,
And yet, upon my life,
She's not content, so I've been told.
I've seen the baker's wife's red gold,
And seen the baker's wife.

FAIS dodo, Colas, mon petit frère,
Fais dodo, t'auras du lolo.
Maman est en haut,
Qui fait du gâteau;
Papa est en bas,
Qui fait du chocolat;
Fais dodo, Colas, mon petit frère,
Fais dodo, t'auras du lolo.

HUSH-A-BYE, Colin, brother of mine,
Mustn't cry, hush-a-bye.
Mamma's up above,
Making cakes for you, love;
And Daddy, downstairs,
Nice choc'late prepares.
Hush-a-bye, Colin, brother of mine,
Mustn't cry, hush-a-bye.

AU clair de la lune,
Mon ami Pierrot,
Prête-moi ta plume
Pour écrire un mot.
Ma chandelle est morte,
Je n'ai plus de feu;
Ouvre-moi la porte
Pour l'amour de Dieu!
Au clair de la lune,
Pierrot répondit:
Je n'ai pas de plume,
Je suis dans mon lit.
Va chez la voisine,
Je crois qu'elle y est,
Car, dans sa cuisine,
On bat le briquet.

BY the moon's silver ray,
Dear Pierrot mine,
A pen lend me, pray,
To write thee a line.
My candle has died,
With cold I'm aquake;
Thy door open wide,
For dear Heaven's sake!
By the light of the moon,
Cruel Pierrot said:
I'll not grant thy boon,
For I am abed.
At our neighbor's, may be,
Thou canst letters indite,
In her kitchen, I see,
They are striking a light.

BEAUTIFUL BIRDS OF THE FAR WEST

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1. Violet Green Swallow. 2. Mountain Bluebird. 3. Western Bluebird. 4. Western Kingbird. 5. Western Tanager. 6. Audubon's Warbler. 7. Bullock's Oriole. 8. Redshafted Flicker. 9. Rufous Humming-bird. 10. Rusty Song Sparrow. 11. Varied Thrush. 12. Steller's Jay.

BIRDS OF THE PACIFIC COAST

THE Pacific coast of North America has many interesting birds, which differ to a considerable extent from those of the regions to the east. Of course there are many birds strong of wing, such as the crow, which range over the whole of North America. The same may be said of the eagles and some of the hawks. Some of the smaller birds are also the same east and west of the Rockies, but others are quite different. The smaller birds can seldom fly over the Rocky Mountains, which form a sort of wall. Southern California has many tropical birds that come up from Mexico and go much farther north than do those from the East. For example, the rest of the country has only one humming-bird, while this region has many. Again, the climate of British Columbia is milder than the region with the same latitude farther east. Major Brooks has drawn some of the most attractive western birds for you.

BIRDS OF NORTH AMERICA

BIRDS OF THE WEST

LOOK for woodpeckers along the edges of thickets, in orchards, among dead trees and on shrubs. They are searching for beetles, ants and grubs, and sometimes for juicy fruits. Be patient, alert and quiet and you may learn of woodpecker ways. Woodpeckers are easily recognized. Their patches of bright colors, sharp clear notes, and their noisy ways soon attract our attention. Hear them *tap, tap, tap,* as they bore for larvæ. Not all birds seen on the trunks of trees are woodpeckers. The nuthatches or the tiny kinglets also search for insects on the bark of trees. But they don't "sit upon their tails" like the woodpeckers. In the colors and styles of their dresses woodpeckers show a family likeness. Usually there is much black and white, with dashes of scarlet or yellow about the head. These patches of bright colors may be of different shapes and in different positions, upon the crown, nape or throat, or in stripes down the sides of the head and neck. The females and young birds usually lack the bright markings of the males.

The California Woodpecker is a true bird of the West. It is at home in the mountain ranges in Mexico and northward into Washington. It need not worry about food even when snow lies deep among the conifers of the uplands, because during the fall it provides for winter. It is known among the Mexicans as *El Carpintero,* "the carpenter." Carpentering is both its profession and its recreation. In autumn, when acorns are plentiful, holes are dug in the trunks of trees, high up above the snow-line, and with great patience and skill acorns are fitted into the holes. A whole tree may be covered with thousands of acorns bedded into the bark so tightly that other animals cannot remove them. During the winter months the woodpeckers congregate and feed upon the insects which have developed in the acorns. The upper parts, wings and tail are glossy, greenish black; the rump and lower parts white; and the black breast streaked with white along the sides. The crown of the adult male is crimson.

Lewis's Woodpecker is of historic interest because it is one of the birds collected by the Lewis and Clark Expedition to the Northwest that was named after Lewis. It is a dark-colored bird, about eleven inches long; with under parts pinkish red; hoary gray chest and collar; and forehead, cheeks and chin of crimson. Males and females are colored alike. This woodpecker has the peculiar habit of fluttering erratically in the air while in flight. Probably it is catching flies.

The range of this bird is along the Pacific coast and eastward to the Rocky Mountains from Arizona to British Columbia.

The Northern Pileated Woodpecker is a shy but spirited woodland bird found in the remote timbered regions of the Rocky Mountains and westward to the coast. It is very wild and hard to approach, but because of the conspicuous scarlet of the head becomes a target for hunters. This all-year resident is of great economic importance on account of the millions of wood-boring insects destroyed every year. The pileated woodpecker is the largest of woodpeckers. The body is blackish slate; the throat white, with a white stripe across the cheek and down the neck; and the whole top of the head in the male a brilliant scarlet. Both sexes have the scarlet crest, or red cap, which gives the bird the name of "pileated."

The Northern Hairy Woodpecker has upper parts of glossy black, with a broad white stripe down the back; wings thickly spotted with white; white under parts; and tail with the three outer pairs of tail feathers white. There are two white and two black stripes on the sides of the head, and the adult male has a scarlet crown. The *rat, tap, tap, tap* of this hardy drummer is a reveille which sets the blood tingling in one's veins. How handsome he looks with the scarlet cap on his head, and how pretty is the white central stripe against the glossy black of his back!

The Cabanis Woodpecker and the Harris Woodpecker are near relatives. The former has a very wide white stripe down the back, and the latter has soiled white or sooty under parts with a few spots on the wings. These medium-sized woodpeckers are found in timbered regions of the West, especially where the timber has been scorched by fires.

Gairdner's Woodpecker is one of the smaller forms. The under parts are smoky white. It is more social than the other species, coming to orchards during the winter, when it destroys the codling moth, plant-lice and other harmful orchard insects.

A BIRD WITH THIRTY-SIX OR MORE NAMES

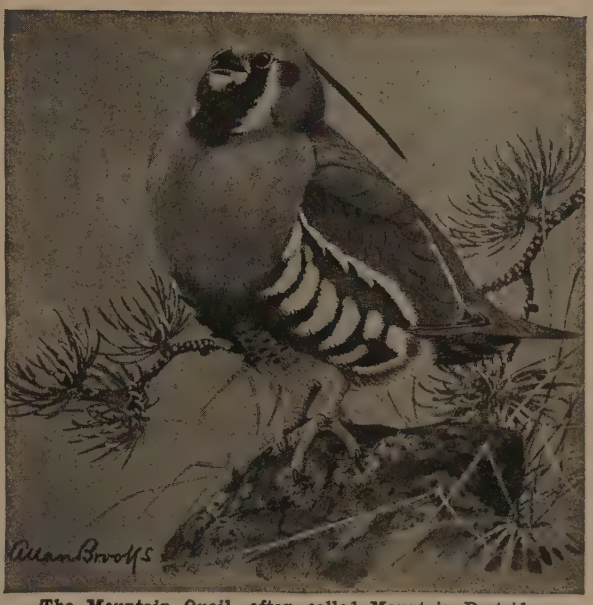
The flicker has many names—about thirty-six in all. Some of the names are: yellow-hammer, high-hole and golden-winged woodpecker. The Red-shafted Flicker is the western form of the golden-winged woodpecker so common in Eastern America. It is common in many parts of the West, where it often remains all the year. The back and wings are brownish gray, barred with black; the under parts brownish yellow, spotted with black from the breast downward; the rump white; and the tail and wings red beneath. The adult male has red jaw patches. The hammering of the flicker is a familiar sound. This bird clings to the back of a tree by fastening its claws firmly in the bark and bracing itself with the stiff quills of its tail. It hammers on the bark in search of delicious ants, larvæ and other insect pests. Near the foot of a tree one may see a pile of chips. Several feet above the ground there is a large round hole cut out of the trunk of the tree. The hole is the entrance to the flicker's nest. The five or six white eggs are laid on the chips at the bottom of the deep cavity.

The Red-breasted Sapsucker is a small woodpecker celebrated for its interesting habit of cutting holes in trees during springtime. The sap flows out and hardens, and insects collect on the sticky paste. In this way sapsuckers secure food for themselves. They are occasionally destructive to apple trees, but ordinarily are found on the mountain-ash, alders or other trees of the woods, where the injury they do is not of economic importance. The upper parts of the red-breasted sapsucker are black, mottled with white; and the under parts are whitish yellow. The head, neck and breast are uniform crimson. Adults of both sexes are colored alike. It is found near the Pacific coast, on both sides of the Cascades, but is ordinarily a summer resident north of California.

SOME GAME BIRDS WHICH ARE FOUND IN THE WEST

The Bobwhite, so well known in Eastern America, is now found in the West. He has migrated westward with eastern people, and, like the people, has adapted himself well to the western climatic conditions. Wherever bobwhite is found he brings interest and pleasure to the lives of the people. "Bobwhite," "Bobwhite!" is a call so distinct and human that even dogs, when they hear it, show that they take it for the call of a person. He has already been described on page 4760, and we shall not repeat the description.

The Mountain Partridge, or Mountain Quail, is a very common bird on the Pacific coast. It is readily recognized by the conspicuous crest, which points *backward*. In habits and flight this quail resembles other members of its family, but the cry is quite different. The note of alarm is a rather faint chirp. The hen has a *cluck* like that of the domestic hen, when calling together her brood, about the first of May.



The Mountain Quail, often called Mountain Partridge.

The Valley Quail of California, found along the Pacific coast region as far north as British Columbia, is distinguished by the crest plume, which, in this species, curls *forward*. On the belly there is an area of rich golden brown; the forehead is whitish with black lines; and the long feathers of the sides have sharp white stripes like those of the back.

The Oregon Ruffed Grouse is a true bird of the open woods. The colors are those of the brown leaves on the ground. This game bird is distinguished by the peculiar ruffs of feathers on the sides of the neck. It is called the "drummer" because the male bird produces a rapid beating noise with the wings against the sides of his body. Drumming with the ruffed grouse is a joy. He beats the air with his wings till it must needs sing for him, and the music is full of refreshing pictures of green mossy logs, arching ferns, and the cool shade of the woods. This grouse differs from the eastern ruffed grouse only in the brighter red-brown tinge of the back.

> Then it is the stately partridge
> Spreads his ruff and mounts his rostrum,
> Gazes proudly round the thicket,
> Sounds his strange and muffled signal.

The Sooty, or Blue, Grouse is found in the edge of timber-land, and is commonly called the "hooter," from the owl-like tones that it utters. It is a bird as large as a hen, dull-colored and uninteresting in appearance. Above each eye is a featherless space, and on the neck of the male are two pouches of bare skin which become pinkish orange in spring when the *boom* or *hoot* of the bird is heard. During the act of booming, these pouches stand out like small oranges on each side of the head. "When he wishes to sound his mellow love-call over the cañon, he takes a position on a limb fifty feet, or higher, from the ground, and, crouching low, with wings drooping and tail spread, fills his air-sacks till they almost hide the head, opens his bill, and sounds a *poom-poom-poom-um-poom*—the love-call to his mate." She may like the sound, but human beings do not.

The California, or Valley, Quail.

THE JAYS, SAUCY BIRDS WHICH DO NOT FEAR MAN

The California Jay is about the size of a robin. It has blue upper parts, changing to brownish gray on the back, and whitish under parts. The crown and sides of the head are uniform cobalt-blue. This jay is found in the lower altitudes of the Pacific coast district from California to British Columbia. While the jay has the reputation of wrecking the homes of other birds and feasting on their eggs, for the most part it lives on grains, fruits, grasshoppers and other insects. The Piñon Jay resembles the California Jay, but has a much shorter tail.

Steller's Jay is one of the large, dark blue, spirited jays of the Pacific coast region. It is of historical interest in being named after Steller, who accompanied Bering's Expedition to the northwest coast of North America. The head, neck and back are sooty black; the wings and tail are a rich blue; and the breast and rump a dull blue. Its notes are a harsh *shaack, shaack, shaack.* Settlers condemn this alert, restless, saucy, inquisitive bird. They claim that it destroys garden stuff such as cabbage leaves or sprouting corn. When the farmer appears the jay retires to the woods, *shrieking* with laughter because of its thefts.

The noisy jay comes with its startling cry—
'Mid yellow leaves of maple takes its perch,
A bit of blue in gold, as if the sky
Were seen in patches through the faded birch.

The Oregon Jay is known by many names—Moosebird, Whisky Jack, Camp Robber, and others. It is found in woods on the Pacific coast. This jay is about the size of a robin. Upper parts are deep brownish gray; the under parts white, tinged with brownish shades. The nest, placed well up in a conifer, is a bulky structure made of twigs and lined with fine mosses and feathers. "The bird is mildly curious and hungry—oh, very hungry—but this is Arcadia, and the shepherds draw nigh with never a doubt of their welcome. There is a childlike insouciance about the way in which the bird annexes a piece of frizzled bacon, humbly intended for the man. 'Shoo,' did you say? 'Why, what do you mean? Can't I have it?' And the bird retires before a flying chip, baffled and injured by such a manifest token of ill breeding. He complains mildly to his fellows. They discuss the question in gentle *whews,* gen-

THE SOOTY, OR BLUE, GROUSE, OFTEN CALLED THE "HOOTER"

erously conclude you don't mean it and return unabashed to the quest."

OUR FAVORITES—LARKS, THRUSHES, ROBINS AND BLUEBIRDS

The Western Meadowlark is a beautiful bird of the meadows, loved by all, even though to many it is but a voice. It is very much the color of the dead grass that covers the ground in spring. The brownish yellow dress is relieved by a throat and breast of brilliant yellow, set off by a large, black crescent-shaped collar and yellow cheeks. The nest is made of thick grass and weeds, in a slight depression overarched with dry grasses. The four to six white eggs are speckled or spotted with brown or purple. There are two broods each year, one in April and one in June. It is a little larger than the meadowlark of the East and a little duller in color.

The Columbian Horned Lark is a small sparrow-like bird which breeds from California well up into British Columbia and east to Idaho. It has a black crescent on the upper chest, and black cheek and crown patches, and feather-tufts or horns directed backward. Its song is a little ditty of sprightly, pleasing notes. On a post, or in the free air above, at almost any hour of the day he may radio words of cheer and greeting to the little wife sitting on the nest below.

The Pacific, or Streaked Horned, Lark is very similar to the Columbian, but has the upper parts streaked broadly with black and tinged with buff. The adult male is handsomely marked. This small sparrow-like bird, with the black line across the breast and small black tufts on the side of the head, resembles the English skylark in its habit of singing while high in the air.

The Western Robin is similar to the Eastern Robin except for the paler cinnamon-rufous under parts, and the paler gray of the upper parts, which seems by contrast to make the head appear blacker. Everyone knows and loves the robin. It is inseparable from the thoughts of springtime activities. Its coming is the sure sign that spring has come. It is the chief herald, the chief poet, and lord high reveler of that joyful season. The commonest call has two parts, each with three notes run together—the first with a rising, the last with a falling, inflection, like *tril-la-ree, tril-la-ree; tril-la-ree, tril-la-ree.* In the fall, Lowell says:

"The sobered robin, hunger-silent now,
seeks cedar-berries blue, his autumn cheer."

The Mountain Robin, or Varied Thrush, has a distinctive blackish collar, and wings conspicuously varied with tawny markings. It is a resident of the forests and mountains from Alaska to California. This thrush loves rain. While the sun shines brightly it is silent, but let the raindrops filter through the conifers and the thrush wakes up, mounts to the top of a fir tree, and at intervals gives forth a single long-drawn note of great beauty—a strange note which, in the silence of the forest, is mysterious and thrilling. The voice seems to come now from the ground, now from a tree-top, from the right and from the left, while the singer sits motionless all the while on a branch not many feet above.

The Western Hermit Thrush, or Mountain Hermit, is a shy, gentle and unassuming bird of the forests, but its song is the voice of heaven expressed in pure, serene and exalted tones. It is a song which haunts the memory forever after. The Russet-backed Thrush is a shy, secluded bird found in low timber, especially near swampy places, on the Pacific coast. It is a uniform olive-brown above, with whitish under parts and heavy spotting on the chest. The sides of the throat and the entire chest have triangular marks of deep olive-brown. Unlike the hermit thrush, the russet-backed thrush is not much given to song, but occasionally the woodside may ring with its *wee loo, weelo, weeloeee.*

Then in that solemn hour I hear
A hymn that comes so sweet and clear,
So pure a tone, it seems to be
A bit of heaven's minstrelsy.

THE BEAUTIFUL BLUEBIRDS OF WESTERN AMERICA

The Western Bluebird is found west of the Cascades, and less commonly eastward toward the Rocky Mountains. It is of sparrow size, with the head, neck and upper parts a rich blue which is brighter on the hind neck, rump and wings; the breast and sides are chestnut; and the under parts dull grayish blue. The adult female resembles the male, but is paler and duller. The nest of sticks and grasses lined with fine grasses, feathers and strings may be found in hollow trees, stumps, woodpecker holes, or in

bird-boxes. The four to six eggs are of uniform pale blue. The bluebird is liked for its beauty and gentle courtesy, and not for its song. It does not sing. "Mr. Bluebird is a gentleman, brave and generous, as he is tender and loving. Mrs. Bluebird is a lady, gentle, confiding and appreciative." Bluebirds like human society, and they will respond quickly to the offer of bird-boxes for their nests. Lowell wrote of the eastern bluebird as "shifting his light load of song from post to post along the cheerless fence"; and Burroughs said that "the expression of his indignation is nearly as musical as his song."

The Mountain, or Arctic, Bluebird is a true bird of the West, and is a summer resident on the eastern slopes of the Cascades. The adult male in summer is "blue all over," with the rich cerulean blue of the upper parts shading to pale blue on the chest and under parts. The under tail feathers are whitish. The female is paler in color than the male. Like its brothers, the mountain bluebird readily accepts the invitation to use bird-houses. Bluebirds are of great value in destroying cutworms, and every effort should be made to attract them to the home grounds.

The sky has not fallen this beautiful morn,
But here is its messenger come to adorn
For a moment our wayside, and bring to our sight
In symbol of azure, a vision of right.

So hopeful, confiding, thou brave mountaineer,
Thou bringest to April a mighty good cheer.
Chill winter is vanished, his rigors forgot,
The Lord is on earth,—what else matters not.

The California Thrasher is a dull grayish brown bird of the coast region. It is a great mimic, and is able to weave into its own song the notes of many other birds. From the top of a high bush it shouts out *kick-it-now, kick-it-now; shut-up, shut-up; dor-o-thy, dor-o-thy; whoa-now, whoa-now;* and many other calls.

THE LITTLE KINGS WHICH FLIT AND SING

Next to the humming-birds, the kinglets are our smallest birds. As the name suggests, they are "little kings." They wear their crowns at all times. One wears a crown of ruby-red, and the other one of yellow gold. They are fluffy little things with grayish olive coats and whitish vests. They spend the summer in the high mountains, but during the spring and fall migrations they may spread out over all the wooded parts of the West.

The Western Golden-crowned Kinglet has a crown patch of bright orange, with plain yellow feathers overlying the orange on the sides, which in turn are bordered by black in front and on the sides. The nest, made of mosses, lichens and fine grasses, is attached to the under-side of a fir bough near its tip, about five feet from the ground. The five to nine eggs are dull white, finely sprinkled with brown. While the mother bird is sitting on the eggs the male tends her faithfully, but spends much of his time making decoy nests in the near-by trees. The making of these seems to give a nervous relief to his impatience.

The Ruby-crowned Kinglet has a distinctive scarlet crest. He is a plump little fellow. The upper parts are olive-green, and the lower parts yellowish white. On top of the head is a narrow stripe of bright ruby color. We see these little birds flitting about the branches of trees picking out small insects and insect eggs and eating them. They are nervous and vivacious as they flit from limb to limb, moving their wings too quickly to be seen and frequently uttering a titter of alarm, which sounds like *chit-tit* or *chit-it-it.*

Never king by right divine
Ruled a richer realm than mine!
What are lands and golden crowns,
Armies, fortresses and towns,
Jewels, scepters, robes and rings,
What are these to song and wings?
Everywhere that I can fly,
There I own the earth and sky;
Everywhere that I can sing
There I'm happy as a king.

—VAN DYKE.

THE CHICKADEES, THE ACROBATS AMONG THE TREES

The Oregon, or Black-capped, Chickadee is similar to the black-capped chickadee of Eastern North America, except for the smaller size and the much darker coloration. The top of the head is shining black, the throat dead black, with a white band on the side of the head and neck. The breast and belly are white. Males and females are colored alike. The nest, made of moss and grasses and lined with rabbits' fur, wool and feathers, is placed low in a hole of a stump or tree. The five to eight tiny white eggs are

sparingly marked with brown spots. The blackcap is a friendly bird, and takes its name from the familiar notes, *chick-a-dee-dee-dee*. There are other notes. The most musical one is a clear sweet whistle of two or three notes with a minor interval between them. The *swee-tee* note is the quickest note in the bird world. When annoyed the chickadee may fly near the intruder, scolding *dee-dee-dee*. The chickadee's motto is: "Any old side up with care." It plays blindman's buff, hide-and-seek and tag among the tree branches, looking all the while with keen eyes for juicy insects or eggs in the cones and catkins. On the coldest day it is active in search of food.

The Chestnut-backed Chickadee resembles the Oregon chickadee in general, but has more chestnut color on the back. Both are of great economic value because of the large number of insects they eat. They wage a merry war on beetles and nits as they peer into every crevice of bark and cone.

There is no sorrow in thy song,
No winter in thy year.
(Attributed to) JOHN LOGAN.

TREE-INSPECTORS WHICH SEARCH FOR THE EGGS OF INSECTS

The nuthatches are friends of kinglets, chickadees and tits. One hears a fine-drawn, high-pitched piping sound—a *tay, tay, tay*. It is the call of the Red-breasted Nuthatch, also found in the East. This is a medium-sized bird, black and grayish blue above, with strong markings of reddish color on the breast and a black line through the eye. The under parts are bluish gray. As a nuthatch runs up and down a tree in spirals it stops a moment to look at you, and then goes on its tireless search for insect eggs. Nuthatches are the acrobats of the winter woods.

The Woodpecker well may despair of this feat—
Only the fly with you can compete!
So much is clear; but I fain would know
How you can so reckless and fearless go,
Head upward, head downward, all one to you,
Zenith and nadir the same in your view.

The Slender-billed Nuthatch does not have the black eye-line. The bill is long and slender and slightly curved. This species is of rare occurrence west of the Cascades, and is found chiefly in wooded regions on the edges of desert land.

The Pigmy Nuthatch is a bird of the mountains remote from dwellings. The pine tree is its home. They are very sociable and are usually seen in a flock on one tree. With its tiny beak this little Lilliputian chisels out a hole in the dead portion of a pine tree, from four to twelve inches deep, with an entrance about one inch in diameter. The nest is made of soft fibres, fur, hair and feathers.

A CLIMBER OF TREES AND A TINY TIT

The California, or Tawny, Creeper is another tree bird resembling the woodpeckers in its climbing habits, but in no way related to them. It has the peculiar habit of climbing from the bottom of a tree up the bark until the branches are reached, when it suddenly drops to the bottom of another tree and begins another climb. The upper parts are rusty brown, broadly and loosely streaked with ashy white; the under parts are dirty white, tinged on the sides with buff. The nest of twigs and moss, lined with plant-down, is crowded beneath a warping piece of bark on a conifer. The creeper is a fine example of protective coloration. If it were not for its movements its presence on the side of a tree would be hard to detect, the color is so like that of the brown bark. But the faint metallic squeak attracts attention. Hark! *Tew, tewy, tewy, ping, tewy;* and again, *kee-kus, wit-it, tee-swee.* The ordinary working-note is a faint *tsip.*

Bush-tits are tiny birds, brownish in color, with light gray under parts and a conspicuous brownish cap. The nest of the bush-tit is very interesting. It is a hanging pouch from six to twelve inches long and three or four inches in diameter, with a small entrance hole in the side near the top. It is made of mosses and plant-down bound together with cobwebs, with a lining of fur, down and feathers, and an outer covering of lichens.

THE WESTERN WRENS AND THEIR SWEET SONG

With a *chick-chick, chick-chick, chick,* which is its way of saying "How do you do?" the Western Winter Wren bobs about among the bushes. The kinglets and warblers may flutter about, and crows may fly hurriedly over to a caucus in the next woods, but the wren goes on with its own business. It is a tiny bird, dark brown above and lighter below, and more or less speckled and barred all over. The song is very attractive to bird-lovers

in the West. From the depths of an ancient forest it pours forth its song in joyous abandon. "The song seems to come as an outburst of pent-up music. It is made up of a rapid series of gurgling notes and wanton trills, not very loud nor of great variety, but having all the spontaneity of bubbling water."

The Rock Wren is a common bird of the West. It has dull grayish brown upper parts, a finely streaked breast, and whitish under parts. The striking feature is the slender bill, which is as long as the head. The point of the bill curves downward. This little bird loves the rocks or arid regions, and its song is greeted by thirsty travelers as the voice of the desert.

The Tule Wren lives in the marshes, among the tules, where it builds its nest a foot from the water. The nest is a bulky affair made of water-soaked pieces of rushes which become very hard when dry. The Seattle Wren is a large wren with strongly contrasting black and white bars on the tail, and a light line over the eye. It is found about dwellings, but is known from the western house wren by its whiter under parts, smaller size and more deliberate movements. It is very attractive because of its vigorous clear-cut song. From an elevated position, at short intervals, and in most vigorous fashion, it pours forth a series of varied notes, now clear and sparkling, now slurred or subdued. The nest, made of grasses, wool, hair and feathers, is placed in a stump, brush-heap, a deserted woodpecker hole, or in a bird-house.

The Western House Wren is larger than the Winter Wren. It is common about buildings and readily uses a bird-house. The male is an untiring songster. The song is a joyous trill which fills the air with a bouquet of music. This is his recreation between family tasks. House wrens are little spitfires during the nesting season. They scold and assault one and all who dare approach their nests. The Wren-tit is a brown little bird that has bright yellow eyes, and a long tail which flits up and down as the bird flies. The song has many variations, but is usually a clear descending *keep-keep-keep-keep-keep-it, keep-it, keep-it.*

Some very intelligent birds of the crow family

The Northern Raven is about twice the size of a crow. It is shining black all over, and has a long, rounded tail. The raven is a bird of the wilderness, where its harsh, croaking notes resound in the still air. Like other members of the crow family, it is cunning, quick-sighted and bold. Ravens eat insects, worms and frogs and sometimes devour the eggs and young of other birds. When very hungry they may attack rabbits and young lambs. The nest, made of sticks, lined with grass, wool and hair, is placed high in an evergreen tree or upon a cliff. The young are fed on stolen eggs.

The Western, or California, Crow is found along streams and in settled portions of the country from the Rocky Mountains to the Pacific coast. It has beautiful glossy-black plumage reflecting greenish and purplish tints. The bill and feet are black. The crow is an outlaw and rejoices in its fame; but it has been able to match its wits against the schemes of man, and thrive in spite of persecution. The Northwest Crow, a smaller form found chiefly near the coast, has the peculiar habit of carrying clams high in the air and then dropping them on the rocks, thus obtaining the juicy meat within.

> Even the blackest of them all, the crow,
> Renders good service as your man-at-arms,
> Crushing the beetle in his coat-of-mail,
> And crying havoc on the slug and snail.

Other interesting birds of the west

Brewer's Blackbird ranges from the plains to the Pacific Ocean. The male is glossy blue-black with a whitish eye; the female is dull black in color. This is a bird of the country or the city back door-yard. Like all blackbirds, it has mannerisms of its own. As it sits on a fence it looks at you with its pale yellow eyes, bristles up, gives a loud shrill *chack,* and flies away.

The Yellow-headed Blackbird, a summer resident of the Columbia River valley, has an orange-yellow head, neck and breast. Its cry sounds like the yodeling of a street urchin.

The Northwestern Red-winged Blackbird is a bird of the swamps. The scarlet patch on the wing of the male is interesting and attractive. The female, known by the company she keeps, is a mottled and streaked brownish gray in color. This bird is of particular interest because of its song and the interesting nest. The nest is hung between reeds or in the

MORE INTERESTING WESTERN BIRDS

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1. Lazuli Bunting. 2. Green-backed Goldfinch. 3. Lewis' Woodpecker. 4. Townsend's Warbler. 5. Chestnut-backed Chickadee. 6. Bush Tit. 7. California Woodpecker. 8. W. Evening Grosbeak. 9. Seattle Wren. 10. Oregon Junco. 11. Spurred Towhee. 12. California Jay.

branches of a low bush near water. It is a comfortable bag-like affair deep enough and big enough to hold the restless bird-babies. When the mother redwing is sitting on the nest her mate stays near. From an uplifted branch he sings a loud sweet *hiva-ker-ee* which may be heard a long way off. He is very nervous and uneasy and makes a great row if anyone comes near, with such cries of distress that one would think he was hurt or that his nestlings were being stolen. "The redwing flutes his *o-ka-lee*."

The Magpie is a medium-sized, long-tailed representative of the crow tribe. The male is lustrous black above, except for a long patch of white on the wing, and pure white on the lower breast, flanks and sides. The very interesting nest is as big as a bushel basket. It is made of interlaced sticks stuck together with mud, and carefully lined for half its depth with small sticks and fine rootlets. The nest may contain from seven to ten pale grayish green spotted eggs. The magpie is condemned by all because he is a cunning thief and a bold brigand. He robs the nests of other birds and carries away eggs and young birds. They are noisy, vivacious fellows who end their speeches in riotous laughter. Some magpies can be taught to talk.

The Cowbird, or Cow Blackbird, is found in all parts of the country from the Atlantic to the Pacific. It is one of the smaller blackbirds, and may be seen in pastures with cows. The male has a shiny black body and a brown head; the female is rather dingy in appearance. The interesting thing about this blackbird is its habit of laying its eggs by stealth in the nests of various other birds which lay small eggs. The larger egg of the cowbird receives a greater share of warmth during incubation and hatches sooner, and the lusty young cowbird soon asserts its leadership in the nest. The foster-mother, whether through ignorance or fear, gives more attention to the care of the foundling, even to the neglect of her own young.

THE AMERICAN MAGPIE, A CUNNING THIEF

Clark's Nutcracker is another interesting relative of the crow tribe, found in the high mountains of the West. The plumage of the adults is smoky gray becoming dirty white while on the head. The wings and tail are contrasting black and white colors. It was named in honor of Lieutenant Clark, of the Lewis and Clark Expedition, because it was first collected then. The nutcracker receives its name

Clark's Nutcracker, or Clark's Crow.

because it uses its strong bill, like a crowbar, to pry open the scales of cones to obtain the scales within. The cone is held firmly with the powerful claws of one foot, and the other foot supports the bird while the seeds are gouged out from under the scales.

Some birds found both east and west

Several birds common in the West are found also in the East and have already been described. For example, the Catbird, which is kin to the thrashers and is a first cousin of the mocking-bird, is described on page 4838. The Cedar Waxwing, the best dressed of birds, is also found in the East, and is described on page 4836. The Bohemian Waxwing is more common West than East. The range of the Kingbird (*Tyrannus tyrannus*) is wide, and on page 4831 you will find his story. The Arkansas, or Western, Kingbird is occasionally seen in the East, but is much more common in the West. It is recognized by its yellowish under parts, and is a common summer resident east of the Cascades. The Pine Siskin is another bird with a wide range, and has been described on page 4832.

Tireless singers which are also good builders

The vireos are small, inconspicuous, quiet-colored birds that appear in the spring. They are tireless singers, and during the nesting season may be heard at any time of the day. Their long slender bills are well adapted to holding worms. They build curious hanging nests of pieces of bark and fibres, lined with down, and attached to the forking twigs near the end of a bough.

The Red-eyed Vireo, also common in the East, is the largest of the vireos and is distinguished by the white line over the eye and by the red iris. The Cassin Vireo has a grayish head, an olive-green back, whitish under parts and a whitish eye-ring. It is seen most often during migrations in lower altitudes, but is a common summer resident on both sides of the Cascades.

The Western Warbling Vireo is one of the most common species remaining during the summer at low levels. It is very plainly colored, with no distinguishing marks; but there is little need for showy dress. It remains, for the most part, concealed in dense foliage and pours forth a continuous song of flute-like, tender and melodious notes.

The Hutton Vireo is common in California. The upper parts are dull olive-brown, tinged with green on the rump, wings and tail; the under parts are a dingy color, tinged on the sides with yellow. The nest, which is made of fine mosses, is hung in a scrub oak among the hanging mosses which cover the tree.

The flycatchers which are always busy

Say's Pewee, or Say's Phœbe, is one of the first flycatchers to arrive in the spring. It is a common summer resident east of the Cascades. The colors are drab above and cinnamon below. The notes are of a melancholy nature, notwithstanding that it is an active bird, making frequent sallies at passing insects on which it feeds. The Black Phœbe, which is black all over, except for a white

belly, is one of the most attractive of the flycatchers. As it sits watching for insects the tail and wings quiver, then it darts out, snaps up an insect and then returns to its perch. The notes are a rising *kee-ree* and a falling *kee-wray*.

The Western Wood Pewee is a summer bird of the orchards. The upper parts are dark, appearing black, and the under parts white or yellowish white. While of gentle, melancholy mood, the wood pewee doesn't seem to be unhappy, at least while flycatching is good. As we watch one sitting on a post or tree stub, it cocks its head, makes a sudden dart for an insect, and then returns to the perch, and, as if by some sudden impulse, utters a rather plaintive sound, *pueer* or *tweer*. "His pensive, gentle ways are voiced by his sad, sweet call."

The Olive-sided Flycatcher has upper parts of brownish slate, a whitish throat and belly, and heavily shaded sides. It is a bird of the tree-tops which tells you where it is by shouting "*see here.*" It is easily alarmed in the presence of strangers and moves about with a restless cry.

Trail's Flycatcher is one of the smaller flycatchers, and is usually found in swampy places. It is of olive color, and utters a smart *swit-choo* when disturbed. The nest is very interesting. It is a bulky structure of grass and rootlets, carefully lined with fine grasses and placed in a tree a few feet from the ground. The loose, ragged ends of grass hanging from the nest serve to distinguish it from the nest of the wood pewee. The latter is very neatly and compactly built.

The Western Flycatcher is one of the commonest flycatchers, and its recognition marks are the pervading yellowness, the bend of the wing being sulphur-yellow. The note is a soft *piswit*. The nest is a cup-shaped structure, covered with mosses and lined with hair and feathers, and placed in the niche of a cliff, in a mossy bank or on a stump.

THE HUMMERS, DAINTY BITS OF LOVELINESS

Humming-birds are found only in America. They are tiny birds whose plumage shows brilliant metallic lustre and various bright colors. They dart about in rapid flight, now pausing to thrust the long slender bill into a flower in search of insects, now sucking the nectar from the depths of another flower. Many persons imagine that humming-birds live on the wing, and it is true that they are seldom seen sitting; but, as a matter of fact, they spend only a small part of their time on the wing. They are so tiny that they are seldom noticed except when the hum of wings attracts attention. It is a pretty sight to see a humming-bird hovering before a blossom, the wings vibrating so fast that they look like a mist, and probing the flower with quick, eager thrusts. In a moment it is gone like a flash. The tiny nest is built of fine mosses bound together with cobwebs and ornamented with lichens in imitation of the tree limb on which it is placed. It contains two tiny pure white eggs.

The Rufous Hummer is distinguished by its bright rufous or cinnamon-red colors, which change to bronzy green on the crown and fade to white on the belly. It is a common summer resident on the western slopes of the Cascades.

The Calliope Hummer is a summer resident east of the Cascades. It is the smallest of the northern species and is recognized by the rose-purple hue of the radiating feathers of the male's gorget. The upper parts are golden green, and the sides of the throat and the under parts white, washed with greenish and brownish shades on the sides.

The Black-chinned, which has a distinctive black gorget, and Allen's Humming-bird, with a fiery gorget and a green back, are other western species.

> Minutest of the feathered kind,
> Possessing every charm combined,
> Nature, in forming thee, design'd
> That thou shouldst be
> A proof within how little space
> She can confine such perfect grace.

A BEAU BRUMMEL OF THE WESTERN FORESTS

The beautiful Western Tanager is one of the most attractive birds of the open forests of the West. Sometimes during migrations it wanders eastward as far as New England. The male is mostly bright yellow, with a brilliant red head and black wings and tail. The female is olive-green in color. The song is comparable to that of the robin, but is uttered at intervals, rather than continuously sustained. There is also a chattering call which suggests the scold of the oriole. Tanagers are expert flycatchers and are very fond of caterpillars. The nest, made of twigs and mosses and lined with

rootlets and hairs, is placed on the horizontal branch of a tree from fifteen to twenty feet from the ground. This tanager was one of the birds collected by the Lewis and Clark Expedition, and was named "Louisiana" after the territory of Louisiana.

BIRD ARCHITECTS WHICH BUILD BEAUTIFUL NESTS

Bullock's Oriole is related to the beautiful Baltimore oriole of Eastern North America. The male is recognized by the black, orange and white plumage; the female is ashy or drab, with yellow tail, and under parts more or less tinged with chrome yellow. The purse-shaped nest of the oriole attracts attention. It is a marvel of skill and industry, and is made of interwoven grasses, fibres and strings. It is from five to nine inches deep, and hung by the rim and fastened to the sides of a limb from ten to forty feet from the ground. The lining is of wool and down. The three to six eggs are bluish white, marked with irregular lines around the larger end. While it is true that orioles eat some early cherries and berries, no farmer should begrudge them these because the chief food of orioles is insects and injurious caterpillars.

How falls it, oriole, that thou hast come to fly
In tropic splendor through our Northern sky?
At some glad moment, was it Nature's choice
To dower a scrap of sunset with a voice?

BIRDS WITH STOUT BILLS AND SWEET SONGS

The grosbeaks are about the size of robins, and have very large conical beaks. They live in trees, and are noted for their bright colors and fine songs. The Western Evening Grosbeak has a black crown, yellow forehead, black wings with large white patches, a black tail, and the remaining plumage sooty olive-brown. It ranges through the western states from Mexico north into British Columbia. The writer has seen great flocks of these attractive birds as far east as Montreal. They came in early spring and fed on the fruits of the mountain-ash and the box elder. One is attracted to their temporary quarters by the striking colors of these strange birds, and by the charming notes that are broadcasted. The notes consist of pure, subdued tones, harsh rattles, high-pitched shrieks and alarm notes. It is one of the few American birds that will eat potato beetles.

The Alaskan Pine Grosbeak, which is a large and handsome finch with rosy red and gray colors and a large, rounded, conical beak, breeds in the interior of Alaska, but comes south in winter to British Columbia, Washington and Montana.

COOING BIRDS: THE MOURNING DOVE AND THE PIGEONS

The Mourning Dove is a small member of the Dove Family, easily recognized by the long pointed tail, the outer feathers of which show white. It is of great value because it lives chiefly on weed seeds. The mournful cooing, which resounds in plaintive, measured cadence, is the love-song of the bird as he woos his mate.

The Band-tailed Pigeon.

The beautiful Passenger Pigeon, once so common in America, is now extinct—a victim of the so-called sporting

tendencies of human beings; but the Band-tailed Pigeon, which is closely related to the former, is somewhat common on the Pacific coast. Unless it is protected, this wild pigeon may meet the fate of its eastern brother.

WILD CANARIES AND OTHER WESTERN FINCHES

The Western Goldfinch, or "Wild Canary," is a summer resident and sometimes a roving winter resident of the West. The male is a beautiful clear canary-yellow, with a black crown patch and with some patches of white on the black wings and tail. The female is grayish brown or olive color with buffy or yellowish under parts. Other striking features of this finch are the canary-like song and the undulating flight. It is often called the Thistle-bird because it is so fond of thistle seeds. The nest is a lovely structure of fibres and grasses lined with down. It is built in an upright crotch of a tree or bush. If the young fledglings are placed in a cage when ready to fly, the mother bird will feed them until they can eat seed, and she will even enter a room to do so. The writer kept one for eleven years; then it died of old age. In the springtime this captive would put on a new dress of yellow and black and would sing from morning till night. The fact that finches are seed-eating birds makes it possible to keep them in captivity—"a sweet-voiced goldfinch singing his soul away."

The Green-backed Goldfinch is rather inconspicuous, but has the habit of displaying the light patches on the wings while fluttering through the air. It is found in valleys along the Pacific coast.

The House Finch has brownish upper parts; a whitish belly, closely streaked with brown; rosy red forehead and rump; and a reddish throat and breast. This pretty finch is a familiar bird of the West, from Kansas to the Pacific Ocean. It nests in vines about houses. The male bubbles over with song as he goes a-courting. From morning till night, on the wing or off, he sings a bright, cheery song to his demure little mate.

The California Purple Finch ranges from California to British Columbia. It is a sturdy finch, of small size, covered all over with rich crimson or rosy red plumage, which is brightest on the crown. The female is known by the company she keeps. She is streaked dusky olive above, with whitish under parts streaked with olive. The spring song of this unobtrusive bird is a mellow, musical yodeling. It has a wild quality which attracts. The notes are limpid and penetrating, and carry a great distance. During courtship, when he bows and dances before his brown-streaked lady, the finch's song is at its best. It is a medley of great expression and sweetness.

Cassin's Purple Finch is found east of the Cascades, where it appears during the spring and early summer months. At other times of the year it is likely to be found on the mountains. It responds readily to human attention and is attracted by sunflower plants left standing in the garden. The red of the crown contrasting with the back is more distinctive than in the California finch.

Two Arctic finches appear occasionally in winter south of British Columbia. The Red-poll is a charming little finch with a deep crimson patch on the crown and a pinkish breast. Hepburn's Rosy Finch is very tame in winter and readily responds to food furnished it about buildings.

The Lazuli Bunting has beautiful bright turquoise-blue upper parts, a brownish breast and a white belly. It is related to the goldfinches, and is very conspicuous because of its colors. The song is bright and beautiful.

Crossbills are finch-like birds that can be recognized by the crossing of the upper and lower bill. This adaptation is of help in picking out seeds from pine cones. The legend is that these birds tried to pull the nails from the Cross and, in doing so, twisted their bills in such a way that wherever they go they will always bear the symbol of their merciful efforts.

The Red Crossbill, which is irregularly distributed throughout the West, is a bird of the North. The male is red and the female olive-green. While feeding crossbills give an intermittent rattling cry, or excited titter, which sounds like *tew, tew, tew.*

SOME ACTIVE SMALL BIRDS OF MANY COLORS

Warblers are very small active birds which flit about the trees and undergrowth after insects. They have all the colors of the rainbow in bewildering combinations, which differ with age and sex. They are most readily studied during the spring migration, when they visit sunny slopes, orchards and the edges of woods.

The most sociable and best known of the warblers is the Yellow Warbler, which is yellow, with brownish stripes on the breast of the male. It is seen in parks and on lawns, where its compact cup-shaped nest of plant fibres lined with feathers and down is placed in bushes or trees.

Where do you hide such a store of delight,
O delicate creature, tiny and slender,
Like a mellow morning sunbeam bright
And overflowing with music tender.
—THAXTER.

The Golden Warbler is yellow, with a black cap. The male of the Pacific Yellow-throated Warbler has a black mask through the eye. It is seen about swamps.

The Black-throated Gray Warbler has distinctive black and white and blue-gray coloration. The head, throat and chest are black, with broad white stripes; the under parts are white; and the sides are white, streaked with black. The song is a simple warbler lay which sounds like *zee-ee, zee-ee, ze, ze, ze.*

The Macgillivray Warbler is yellow, with the forehead and neck slate-colored. The Lutescent Warbler is a small greenish yellow species resembling the yellow warbler in general color, but lacking the brown stripes on the breast. The beautiful Audubon Warbler, the most abundant western warbler, was named after the great bird artist, Audubon. It has yellow on the crown, throat, sides of breast, and rump. Townsend's Warbler is beautifully marked with orange and black. It is a common migrant in spring. The Long-tailed Chat is of special interest because it sings during the night. The song is clear, loud and vigorous.

BIRDS THAT ARE OFTEN ON THE WING

Swallows are small, nearly songless birds with long pointed wings, small bills and big mouths. When they are not sailing through the air they may be seen perched on telegraph wires, fences and barns. They do not wear any gay colors. When flying they look black and white; when closer at hand they show glossy dark blue or green backs, and whitish or brownish breasts. The Barn Swallow, the Bank Swallow and the Cliff Swallow have already been described on page 4835.

The Violet-green Swallow is white below, but has a white line passing over the eye from behind and two conspicuous white spots on each side of the rump. The back is a beautiful violet-green color. This is a distinctive western swallow. It is very common in the region from Alaska to Arizona.

The Western Purple Martin is one of the largest swallows, with upper parts a rich glossy purplish black, and wing and tail dull black. It will build a nest of leaves and trash in a bird-house. Purple martins are sociable birds, and very talkative.

The Western Nighthawk is one of the last birds to arrive in spring. It is not a hawk, but more closely resembles the swifts. The upper parts are glossy black, mottled with gray; the belly is barred with black and white, and there is a white throat patch bordered below by a blackish chest patch. This bird is seen flying at twilight. "How wonderfully at home they seem in the sky! Now they soar with wings set at a right angle, then flap along in a straight line, to dive suddenly straight down almost into one's lap with a loud, whizzing boom."

SMALL BIRDS THAT WEAR SUITS OF BROWN

The sparrows are quite small, dull-plumaged birds with striped brown backs. They are much the color of the ground and bushes where they live. The Western Chipping Sparrow is the smallest of the sparrows. It is of warbler size, and has a bright chestnut crown and light gray under parts. It frequently nests in the vines about houses and is very sociable in every way. The nest is made of rootlets and grasses heavily lined with horsehairs. The greenish blue eggs are freely speckled with reddish brown near the larger end. The Western Vesper Sparrow shows outer white tail feathers when flying. It is a fine singer of the fields and open sage. The Western Savanna Sparrow, seen in low wet meadows, resembles the vesper sparrow but lacks the white outer tail feathers.

The Rusty Song Sparrow is a common summer resident west of the Cascades. It is of rusty brown coloration, with heavily spotted under parts. It is a fine songster. "Mounting some bush or upturned root, he greets his listeners with *'peace, peace, peace be unto you, my children.'*"

The Golden-crowned Sparrow is common west of the Cascades. It is an attractive singer, and is distinguished from

other sparrows by the yellow patch on the crown. Nuttall's Sparrow is one of the white-crowned sparrows. It is found in bushy places near the coast. Gambel's Sparrow, which is very similar, is found east of the Cascades.

The Western Lark Sparrow is a large sparrow, found in fields and brushy places. The head is variegated black, white and chestnut, and the fan-shaped tail is broadly tipped with white that is conspicuous in flight. The nest is made of grasses and rootlets, and is usually placed on the ground. The whitish eggs are spotted and scrawled in zigzags and scrolls of browns and purplish blacks.

"The song is composed of a series of chants, each syllable rich, loud and clear, and interspersed with emotional thrills."

I thought the sparrow's note from heaven,
Singing at dawn on the alder bough;
I brought him home in his nest, at even;
He sings the song, but it cheers not now,
For I did not bring home the river and sky,—
He sang to my ear,—they sang to my eye.
—EMERSON.

Gambel's Sparrow.

The Oregon Towhee is a large finch-like bird found on the west side of the Cascades. The upper parts are mainly black, with inconspicuous white markings. The Oregon Junco, or Western Snowbird, is seen during the winter and spring. It is of sparrow size, with the black head and throat contrasting with the white breast. The outer white tail feathers show when it is flying. This bird is very sociable and is readily attracted about the home in winter.

THE LONE FISHERMAN WHICH PATROLS THE STREAMS

The Belted Kingfisher is one of the best known of the fish-catching birds. It patrols streams in search of food which is secured near the surface of the water. The kingfisher sits on a dead limb overhanging the water and for a few minutes intently scans the water beneath; then it drops like a stone, diving head first into the stream with a great splash. There is a struggle in the water, but in a few moments the bird rises to the limb with a squirming fish in its great bill.

The interesting nest of the kingfisher is made by burrowing in the bank of a river. At the end of a tunnel five or six feet long it hollows out a chamber and makes a nest of sticks, fish-bones, bark and grass. The same nest may be used for several years. The kingfisher is larger than a robin. The back and tail are a pretty bluish gray, and there is a belt of the same color across the white breast. The wings and tail are speckled with white, and on the head there is a dark crest. The bill is large and heavy. The whole manner of the bird is bold and dashing. The note is a shrill rattle. When the young are large enough to leave the nest they may be seen in a row on a limb where they are being taught the art of fishing.

The Water Ouzel, or American Dipper, is another interesting bird associated with the mountain streams of the West. It is at home in a rushing torrent. The size is about that of a robin, but it looks smaller because of the very short tail. The adult is slate-colored all over. The young birds have the under feathers tipped with white, and usually a white throat. The wings of the ouzel are short and rounded, and the plumage is so soft and thick that it can go under water without getting wet. On cold mornings, when all other birds are shivering, the water ouzel is jolly and lively. It flies about in the snow, dives under the ice, coming out at an air hole, and sings as if it were summer weather. The nest, found on a shelf of rock, is a hut-like structure made of soft green moss which is kept green by sprinkling. On one side of the nest is a hole for a door. The eggs are pure white. Often the nest may be found near or under a waterfall.

BIRDS OF PREY AND BIRDS OF THE NIGHT

Hawks are birds of prey, that is, birds that live on animals which they hunt and catch for themselves. Owls are birds of prey, but they hunt by night. Hawks are well fitted for their work. They have long wings by which they can fly swiftly; sharp, curved claws made for grasping and holding things; and a hooked beak well adapted to cutting and tearing flesh. The Western Red-tailed Hawk is one of the largest of the hawks, easily recognized by the red tail. Cooper's Hawk, the Sharp-shinned Hawk and the Sparrow Hawk have already been described on page 4761.

Owls differ from other birds in having eyes that look forward, like ours. They have broad faces which look even wider because of the feathers which stand out around the eyes. Owls are also birds of prey and hunt at night. Most American owls have a wide range, and several species that are common in the West have already been described, beginning on page 4762. Some Western owls are not found very far to the East, however.

The Burrowing Owl.

The Pigmy Owl is very small, being rather smaller than a robin. It flies about and feeds in the bright sunshine, though it is more common in the evening. "It is tame and unsuspicious and may be decoyed for a considerable distance by imitating its call note to which it responds readily." The Short-eared Owl, also found in the East, has the same habits.

The Burrowing Owl is distinctly a Western bird. It builds its nest at the end of an old burrow of a prairie-dog or ground-squirrel, or in a similar cavity. It lives on insects and small mammals. This owl is very polite. It is always bowing, and turning from side to side, in its efforts to greet you.

"I rejoice that there are owls. Let them do the idiotic and maniacal hooting for men. It is a sound admirably suited to swamps and twilight woods."
—THOREAU.

Learned of every bird its language,
Learned their names and all their secrets,
How they built their nests in summer,
Where they hid themselves in winter,
Talked with them whene'er he met them,
Called them Hiawatha's chickens.
—LONGFELLOW.

There are, besides "native" birds, those which have been introduced from other lands. A species introduced from China, the Ring-necked Pheasant, has become one of the best-known birds of the Pacific coast, being particularly abundant in California, Oregon and Washington, in the valleys west of the Cascades and in the irrigated districts east of the mountains. Because of the protection afforded it, it has increased so rapidly as to be a serious menace to farmers' crops in certain sections, and is so tame from its association with man that it is a frequent nester in vacant lots under weeds or brush piles. The young are able to care for themselves within a few hours after hatching out. The male pheasant is gay in variegated plumage, but the female and young are dull-colored in pale browns and blacks. The male is very noisy during the breeding season, making a peculiar cackling crow both day and night.

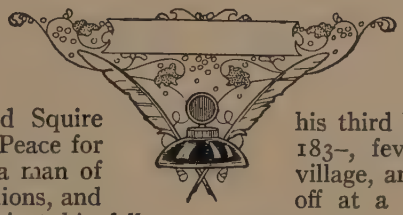
The Ground Cuckoo, or Ground Runner, is, as its name implies, a member of the great Cuckoo Family. It lives on the foothills or in the desert, where the characteristic vegetation is cactus, sage brush or yucca. When pursued it runs along the ground quickly and when about to be overtaken makes a quick jump aside into the brush. It is a shy and solitary bird.

THE NEXT STORY OF ANIMAL LIFE IS ON PAGE 5227.

A STORY OF AN ENGLISH BOY

THIS is a celebrated story of English school life. It was written in 1856 by Thomas Hughes, an eminent lawyer and judge, but, better still, a good man and a friend and helper of the poor. Judge Hughes was born October 23, 1823, and died March 22, 1896. He was educated first at Rugby, under the famous Dr. Arnold, and afterward at Oxford. This famous story is largely an account of his and his brother's experiences, and we are not far wrong in reading Thomas Hughes where it says Tom Brown. He also wrote Tom Brown at Oxford. But that is not quite so delightful a book as its forerunner, perhaps because it is more difficult to interest us in the life of a young man than in the doings of a merry schoolboy.

TOM BROWN'S SCHOOLDAYS



IN the royal county of Berks, and in that part of it known as the Vale of White Horse, lived Squire Brown, Justice of the Peace for the county. He was a man of strong democratic opinions, and had no prejudices against his fellowmen less blessed than he with worldly wealth.

Tom's mother was a very practical country lady. Under the guidance of this alert and sensible woman Tom's character had been shaped in the right direction from his earliest years. His father believed in letting him mingle with the boys of the village, instead of keeping him aloof from them. The squire provided the village boys with a fine cricket-pitch, and even supplied them with bats and balls. But Tom's devotion to the game led to his inducing his playmates to stay away from school and play cricket. The village schoolmaster had to complain of this to the squire. Perhaps it was in consequence that Tom was sent off to a private school at the age of nine.

His life at the private school was by no means a pleasant change to him. Tale-bearing, spying and all sorts of petty meanness were regular features of the place, much to Tom's disgust. He, however, imbibed a fair amount of Latin and Greek, but in the holidays was constantly wanting the squire to send him to a public school.

In the middle of his third half-year, in October, 183–, fever broke out in the village, and the boys were sent off at a day's notice to their respective homes. The squire decided to send Tom to the famous school at Rugby, where the head master had kindly agreed to let him enter at once for the last six weeks of the term.

Tom's father accompanied him into London to see him off in the Tally-ho coach for Rugby, and gave him, in his own blunt way, some good advice.

From the old guard of the Tally-ho Tom heard many tales of life at Rugby and of the pranks played there by the schoolboys. So eager was he to know of the new life into which he was to enter that he plied the guard with question after question. The old fellow not only brushed up his memory, but drew a little on his imagination, though all he said was accepted by Tom in perfect faith.

Tom had not time to alight from the coach, as it slowed down at Rugby, before one of the boys came running from the school and jumped up behind. This lad announced to Tom that his name was East, and his aunt, who lived down in Berkshire, had written to him to look out for young Tom Brown.

TOM ARRIVES AT RUGBY AND FINDS AN UNEXPECTED FRIEND THERE

This was indeed a jolly reception for the lonely traveler. He and East were chums at once, for the lad was of a frank and friendly disposition, and introduced Tom to all his own particular friends forthwith.

Nothing could exceed the new boy's interest in all the features of the famous school. The study-room, with its sporting pictures, its cricket-bats, fishing-rods and climbing-irons, seemed to him more interesting than Windsor Castle itself. At the dinner-table he was a little subdued. But to East's tales of the football field and its numerous accidents he listened as to the battle stories of a veteran. In the big room all the scholars now assembled to answer to their names, and it was with a thrill of pleasure that Tom made his first response as a public-school boy.

Tom was in luck's way, for this day of his arrival was signalized by the School-house match, in which East counted himself a tremendous hero to be permitted to play on the School-house side.

TOM'S FIRST GREAT FOOTBALL MATCH, AND HOW HE ACQUITTED HIMSELF

It was indeed a great sight for Tom, this first football match on a grand scale in which he was to take his place. For the School-house team of some fifty boys had to meet and do battle with all the rest of the school.

Such excitement Tom had never witnessed. Nothing approaching the scrimmages had he ever imagined, and in this breathless match he was to have his share. For the ball rolled slowly in behind the School-house goal, not three yards in front of a dozen of the biggest School players-up.

There stood the School-house præposter, safest of goal-keepers, and Tom Brown by his side. The blood of all the Browns was up. The two rushed in together, and threw themselves on the ball under the very feet of the advancing column. Over them toppled the leaders of the rush, shooting over the back of the præposter, but falling flat on Tom and knocking all the wind out of his small carcass.

THE NEW CHUMS GOSSIP BY THE FIRE AND PREPARE FOR "THE SINGING"

Tom soon recovered from his shock, entering with real zest into the life of the school. Over the fire the boys sat discussing the great match and other adventures of the football field until it was time to go to their rooms and wash up for the singing. Supper-time came in due course at seven o'clock. The meal consisted of bread and cheese and beer, which were all saved for "the singing." Directly afterward the fags went to work to prepare the hall. Each new boy of that term was placed on the table in turn and made to sing a solo, under the penalty of drinking a large mug of salt and water if he resisted or broke down. Tom sang an old West-country song, The Leather Bottél.

Thus began Tom Brown's life at Rugby, and a more exciting day for his entrance there could not have been chosen. He shared the fun of it with the new boys who had been there from the beginning of the term. The sermon which he heard the doctor preach on the Sunday revealed to him the strong and noble character under whose guidance he had been placed. For every boy in the school was sooner or later bound to come into personal touch with the head master. Tom was installed in the third form, but, as he had already been well grounded in grammar, the master considered he had been placed too low. At the end of the term he won his remove to the lower fourth, where all his School-house friends were, so that his delight in being a Rugby boy was now supreme.

THE TWO CHUMS TEACH SOME OF THE BIG BULLIES A NEEDFUL LESSON

Flashman, a fifth-form scholar and a notorious bully, was so unfair and even brutal to the younger lads whom he made to fag for him that Tom and East, on whom the bully had also tried his work, decided to rebel. They maintained a steady opposition to Flashman and his friends.

The result of it was that Tom and East gained the reputation of shirking fag duty. Tom, having broken other rules of the school, particularly one as to fishing from a prohibited part of the river Avon, found himself before the head master and in danger of expulsion, unless he undertook to mend his ways. This he did, and was as good as his promise. On his return to school next term he was invited by the wife of the head master to take tea with her, and was told he was to have the Gray study, which was

a favorite one. She asked him if he would take under his care a new pupil named George Arthur, who was in delicate health and had never before been away from home. Somewhat reluctantly Tom undertook this responsibility, as it would interfere with other private plans of his. Arthur proved a gentle young lad who, in the dormitory that night, unlike most of the boys, knelt by the side of his bed for prayers. He was jeered at in consequence by one of the others, who threw a slipper at him. Tom quickly met the situation by letting the boot he had just pulled off fly at the head of the bully.

TOM AS THE CHAMPION AND DEFENDER OF ONE OF THE NEW BOYS

"If any fellow wants the other boot," he exclaimed warmly, "he knows how to get it!"

The little scene had an influence on some of the boys in the room, and on Tom most of all. Next morning he began the day by silent prayer at his bedside. And there were others who followed his example. This was the immediate result of his taking care of Arthur.

Arthur was greatly interested in birds and animals, and soon made friends with Martin, one of the school's curious characters, who tamed snakes and kept birds in his study. Together they went exploring in the woods, and Tom had more than once to get them out of scrapes. It was over Arthur, too, that Tom had his last fight in the school, with a bully named Williams, who had promised to thrash little Arthur for some fancied insult. This fight was an epic one—right against might. A description of it we shall give in the words of the book.

THE GREAT FIGHT AT RUGBY

TOM was detained in school a few minutes after the rest, and on coming out into the quadrangle, the first thing he saw was a small ring of boys, applauding Williams, who was holding Arthur by the collar.

"There, you young sneak," said he, giving Arthur a cuff on the head with his other hand, "what made you say that"—

"Hullo!" said Tom, shouldering into the crowd, "you drop that, Williams; you shan't touch him."

"Who'll stop me?" said the Slogger, raising his hand again.

"I," said Tom; and suiting the action to the word, struck the arm which held Arthur's arm so sharply, that the Slogger dropped it with a start, and turned the full current of his wrath on Tom.

"Will you fight?"

"Yes, of course."

"Huzza, there's going to be a fight between Slogger Williams and Tom Brown!"

The news ran like wild-fire about, and many boys who were on their way to tea at their several houses turned back, and sought the back of the chapel, where the fights come off.

"Just run and tell East to come and back me," said Tom to a small School-house boy, who was off like a rocket to Harrowell's, just stopping for a moment to poke his head into the School-house hall, where the lower boys were already at tea, and sing out, "Fight! Tom Brown and Slogger Williams."

Up start half the boys at once, leaving bread, eggs, butter, sprats, and all the rest to take care of themselves. The greater part of the remainder follow in a minute, after swallowing their tea, carrying their food in their hands to consume as they go. Three or four only remain, who steal the butter of the more impetuous, and make to themselves an unctuous feast.

In another minute East and Martin tear through the quadrangle carrying a sponge, and arrive at the scene of action just as the combatants are beginning to strip.

Tom felt he had got his work cut out for him, as he stripped off his jacket, waistcoat, and braces. East tied his handkerchief round his waist, and rolled up his shirt-sleeves for him: "Now, old boy, don't you open your mouth to say a word, or try to help yourself a bit, we'll do all that; you keep all your breath and strength for the Slogger." Martin meanwhile folded the clothes, and put them under the chapel rails; and now Tom, with East to handle him and Martin to give him a knee, steps out on the turf, and is ready for all that may come: and here is the Slogger too, all stripped, and thirsting for the fray.

It doesn't look a fair match at first glance: Williams is nearly two inches taller, and probably a long year older than his opponent, and he is very strongly made about the arms and shoulders; "peels well," as the little knot of big fifth-form boys, the amateurs, say; who stand outside the ring of little boys, looking complacently on, but taking no active part in the proceedings. But down below he is not so good by any means: no spring from the loins, and feeblish, not to say shipwrecky, about the knees. Tom, on the contrary, though not half so strong in the arms, is good all over, straight, hard, and springy from neck to ankle, better perhaps in his legs than anywhere. Besides, you can see by the clear white of his eye and fresh bright look of his skin, that he is in tip-top training, able to do all he knows; while the Slogger looks rather sodden, as if he didn't take much exercise and ate too much tuck. The time-keeper is chosen, a large ring made, and the two stand up opposite one another for a moment, giving us time just to make our little observations.

"If Tom'll only condescend to fight with his head and heels," as East mutters to Martin, "we shall do."

But seemingly he won't, for there he goes in, making play with both hands. Hard all, is the word; the two stand to one another like men; rally follows rally in quick succession, each fighting as if he thought to finish the whole thing out of hand. "Can't last at this rate," say the knowing ones, while the partisans of each make the air ring with their shouts and counter-shouts of encouragement.

"Take it easy, take it easy—keep away, let him come after you," implores East, as he wipes Tom's face after the first round with wet sponge, while he sits back on Martin's knee, supported by the Madman's long arms, which tremble a little from excitement.

"Time's up," calls the time-keeper.

"There he goes again, hang it all!" growls East as his man is at it again as hard as ever. A very severe round follows, in which Tom gets out and out the worst of it, and is at last hit clean off his legs, and deposited on the grass by a right-hander from the Slogger.

Loud shouts rise from the boys of Slogger's house, and the School-house are silent and vicious, ready to pick quarrels anywhere.

"Two to one in half-crowns on the big 'un," says Rattle, one of the amateurs, a tall fellow, in thunder-and-lightning waistcoat, and puffy, good-natured face.

"Done!" says Groove, another amateur of quieter look, taking out his note-book to enter it—for our friend Rattle sometimes forgets these little things.

Meantime East is freshening up Tom with the sponges for next round, and has set two other boys to rub his hands.

"Tom, old boy," whispers he, "this may be fun for you, but it's death to me. He'll hit all the fight out of you in another five minutes, and then I shall go and drown myself in the island ditch. Feint him—use your legs!—draw him about! he'll lose his wind then in no time, and you can go into him. Hit at his body too, we'll take care of his frontispiece by and by."

Tom felt the wisdom of the counsel, and saw already that he couldn't go in and finish the Slogger off at mere hammer and tongs, so changed his tactics completely in the third round. He now fights cautious, getting away from and parrying the Slogger's lunging hits, instead of trying to counter, and leading his enemy a dance all round the ring after him. "He's funking; go in, Williams," "Catch him up," "Finish him off," scream the small boys of the Slogger party.

"Just what we want," thinks East, chuckling to himself, as he sees Williams, excited by these shouts, and thinking the game in his own hands, blowing himself in his exertions to get to close quarters again, while Tom is keeping away with perfect ease.

They quarter over the ground again and again, Tom always on the defensive. The Slogger pulls up at last for a moment, fairly blown.

"Now then, Tom," sings out East, dancing with delight. Tom goes in in a twinkling, and hits two heavy body blows, and gets away again before the Slogger can catch his wind; which when he does he rushes with blind fury at Tom, and being skilfully parried and avoided, over-reaches himself and falls on his face, amidst terrific cheers from the School-house boys.

"Double your two to one?" says Groove to Rattle, note-book in hand.

"Stop a bit," says that hero, looking uncomfortably at Williams, who is puff-

ing away on his second's knee, winded enough, but little the worse in any other way.

After another round the Slogger too seems to see that he can't go in and win right off, and has met his match or thereabouts. So he too begins to use his head, and tries to make Tom lose patience and come in before his time. And so the fight sways on, now one, and now the other, getting a trifling pull.

Tom's face begins to look very one-sided—there are little queer bumps on his forehead, and his mouth is bleeding; but East keeps the wet sponge going so scientifically, that he comes up looking as fresh and bright as ever. Williams is only slightly marked in the face, but by the nervous movement of his elbows you can see that Tom's body blows are telling. In fact, half the vice of the Slogger's hitting is neutralized, for he daren't lunge out freely for fear of exposing his sides. It is too interesting by this time for much shouting, and the whole ring is very quiet.

"All right, Tommy," whispers East; "hold on's the horse that's to win. We've got the last. Keep your head, old boy."

But where is Arthur all this time? Words cannot paint the poor little fellow's distress. He couldn't muster courage to come up to the ring, but wandered up and down from the great fives'-court to the corner of the chapel rails. Now trying to make up his mind to throw himself between them, and try to stop them; then thinking of running in and telling his friend Mary, who he knew would instantly report to the Doctor. The stories he had heard of men being killed in prize-fights rose up horribly before him.

Once only, when the shouts of "Well done, Brown!" "Huzza for the School-house!" rose higher than ever, he ventured up to the ring, thinking the victory was won. Catching sight of Tom's face in the state I have described, all fear of consequences vanishing out of his mind, he rushed straight off to the matron's room, beseeching her to get the fight stopped, or he should die.

But it's time for us to get back to the close. What is this fierce tumult and confusion? The ring is broken, and high and angry words are being bandied about; "It's all fair,"—"It isn't,"—"No hugging;" the fight is stopped. The combatants, however, sit there quietly, tended by their seconds, while their adherents wrangle in the middle. East can't help shouting challenges to two or three of the other side, though he never leaves Tom for a moment, and plies the sponges as fast as ever.

The fact is, that at the end of the last round, Tom seeing a good opening, had closed with his opponent, and after a moment's struggle had thrown him heavily, by the help of the fall he had learnt from his village rival in the Vale of White Horse. Williams hadn't the ghost of a chance with Tom at wrestling; and the conviction broke at once on the Slogger faction, that if this were allowed their man must be licked. There was a strong feeling in the school against catching hold and throwing, though it was generally ruled all fair within certain limits; so the ring was broken and the fight stopped.

The School-house are over-ruled—the fight is on again, but there is to be no throwing; and East in high wrath threatens to take his man away after next round (which he don't mean to do, by the way), when suddenly young Brooke comes through the small gate at the end of the chapel. The School-house faction rush to him. "Oh, hurra! now we shall get fair play."

"Please, Brooke, come up, they won't let Tom Brown throw him."

"Throw whom?" says Brooke, coming up to the ring. "Oh! Williams, I see. Nonsense! of course he may throw him if he catches him fairly above the waist."

Now, young Brooke, you're in the sixth, you know and you ought to stop all fights. He looks hard at both boys. "Anything wrong?" says he to East nodding at Tom.

"Not a bit."

"Not beat at all?"

"Bless you, no! heaps of fight in him. Ain't there, Tom?"

Tom looks at Brooke and grins.

"How's he?" nodding at Williams.

"So, so; rather done, I think, since his last fall. He won't stand above two more."

"Time's up!" the boys rise again and face one another. Brooke can't find it in his heart to stop them just yet, so the round goes on, the Slogger waiting for Tom, and reserving all his strength to hit him out should he come in for the wrestling dodge again, for he feels that

that must be stopped, or his sponge will soon go up in the air.

And now another new comer appears on the field, to wit, the under-porter, with his long brush and great wooden receptacle for dust under his arm. He has been sweeping out the schools.

"You'd better stop, gentlemen," he says; "the Doctor knows that Brown's fighting—he'll be out in a minute."

"You go to Bath, Bill," is all that that excellent servitor gets by his advice. And being a man of his hands, and a staunch upholder of the School-house, can't help stopping to look on for a bit, and see Tom Brown, their pet craftsman, fight a round.

It is grim earnest now, and no mistake. Both boys feel this, and summon every power of head, hand, and eye to their aid. A piece of luck on either side, a foot slipping, a blow getting well home, or another fall, may decide it. Tom works slowly round for an opening; he has all the legs, and can choose his own time: the Slogger waits for the attack, and hopes to finish it by some heavy right-handed blow. As they quarter slowly over the ground, the evening sun comes out from behind a cloud and falls full on Williams's face. Tom darts in; the heavy right-hand is delivered, but only grazes his head. A short rally at close quarters, and they close; in another moment the Slogger is thrown again heavily for the third time.

"I'll give you three to two on the little one in half-crowns," said Groove to Rattle.

"No, thank'ee," answers the other, diving his hands further into his coat-tails.

Just at this stage of the proceedings, the door of the turret which leads to the Doctor's library suddenly opens, and he steps into the close, and makes straight for the ring, in which Brown and the Slogger are both seated on their seconds' knees for the last time.

"The Doctor! the Doctor!" shouts some small boy who catches sight of him, and the ring melts away in a few seconds, the small boys tearing off, Tom collaring his jacket and waistcoat, and slipping through the little gate by the chapel, and around the corner to Harrowell's with his backers, as lively as need be; Williams and his backers making off not quite so fast across the close; Groove, Rattle, and the other bigger fellows trying to combine dignity and prudence in a comical manner, and walking off fast enough, they hope, not to be recognised, and not fast enough to look like running away.

Young Brooke alone remains on the ground by the time the Doctor gets there, and touches his hat, not without a slight inward qualm.

"Hah! Brooke. I am surprised to see you here. Don't you know that I expect the sixth to stop fighting?"

Brooke felt much more uncomfortable than he had expected, but he was rather a favorite with the Doctor for his openness and plainness of speech; so blurted out, as he walked by the Doctor's side, who had already turned back—

"Yes, sir, generally. But I thought you wished us to exercise a discretion in the matter too—not to interfere too soon."

"But they have been fighting this half-hour and more," said the Doctor.

"Yes, sir; but neither was hurt. And they're the sort of boys who'll be all the better friends now, which they wouldn't have been if they had been stopped any earlier—before it was so equal."

"Who was fighting with Brown?" said the Doctor.

"Williams, sir, of Thompson's. He is bigger than Brown, and had the best of it at first, but not when you came up, sir. There's a good deal of jealousy between our house and Thompson's, and there would have been more fights if this hadn't been let go on, or if either of them had had much the worst of it."

"Well but, Brooke," said the Doctor, "doesn't this look a little as if you exercised your discretion by only stopping a fight when the School-house boy is getting the worst of it?"

Brooke, it must be confessed, felt rather gravelled.

"Remember," added the Doctor, as he stopped at the turret-door, "this fight is not to go on—you'll see to that. And I expect you to stop all fights in future at once."

"Very well, sir," said young Brooke, touching his hat, and not sorry to see the turret-door close behind the Doctor's back.

Meantime Tom and the staunchest of his adherents had reached Harrowell's, and Sally was bustling about to get them a late tea, while Stumps had been sent

off to Tew the butcher, to get a piece of raw beef for Tom's eye, which was to be healed off-hand, so that he might show well in the morning. He was not a bit the worse except a slight difficulty in his vision, a singing in his ears, and a sprained thumb, which he kept in a cold-water bandage, while he drank lots of tea, and listened to the Babel of voices talking and speculating of nothing but the fight, and how Williams would have given in after another fall (which he didn't in the least believe), and how on earth the Doctor could have got to know of it,—such bad luck! He couldn't help thinking to himself that he was glad he hadn't won; he liked it better as it was, and felt very friendly to the Slogger. And then poor little Arthur crept in and sat down quietly near him, and kept looking at him and the raw beef with such plaintive looks, that Tom at last burst out laughing.

"Don't make such eyes, young 'un," said he, "there's nothing the matter."

"Oh but, Tom, are you much hurt? I can't bear thinking it was all for me."

"Not a bit of it, don't flatter yourself. We were sure to have had it out sooner or later."

"Well, but you won't go on, will you? You'll promise me you won't go on?"

"Can't tell about that—all depends on the houses. We're in the hands of our countrymen, you know. Must fight for the School-house flag, if so be."

. . . . . .

With Tom's loyal words ends our extract from the book, and the story is continued in a shorter form.

Two years after the events recorded, Arthur, who was now sixteen and was an apt and bright scholar, was at the head of the twenty. Both Tom and East were far less successful in their studies, and were none too highly placed in the fifth form. It was a very happy friendship, however, for Tom and East, with their fine, manly characteristics and their physical powers, felt the refining influence of Arthur's gentler nature. They were the better in consequence, while he was sheltered from the buffetings of the school by having such manly chums.

Arthur was one of several scholars who took the fever and had to be sent home until he was recovered. Before going away he said to Tom there was one favor he had to ask of him. It was that he would give up the *vulgus* books and cribs. By that he meant that Tom had not been doing his Latin and Greek exercises honestly, but using translations. Tom looked away at this, and then, catching his friend's gaze, asked why.

"Because—because you're the honestest boy at Rugby, and that isn't honest."

Arthur soon brought Tom to his way of thinking, and had his promise. East had also been guilty of cribbing, like Tom, but he was now brought to honest study as the result of Tom's promise to Arthur. From that time forward both derived satisfaction and pleasure from their studies which before had been unknown to them.

TOM'S LAST YEAR AT RUGBY SCHOOL, AND WHAT HE LEARNED THEN

So two more years passed away, and it was again the end of the summer term. An important cricket match was to take place, and there was a union of old boys. On the slope toward the cricket ground stood three of the older scholars. There was one slight of build, with bushy eyebrows and a dry, humorous smile. By his side was another of manly form, almost six feet tall, tanned of face, with curly brown hair and sprouting whiskers, his laughing eyes gleaming below his smart straw hat. He was dressed in a white flannel shirt and trousers, with the captain's belt about his waist, and on his feet were yellow cricket shoes. This was our hero, Tom Brown, now nineteen, a præposter, or monitor, and captain of the eleven. East was he of the bushy eyebrows. The third slight but well-knit and active figure was Arthur, greatly improved physically.

The master of Tom's form came up just then and invited Tom to sup with him. At that meal Tom learned for the first time how the great and noble man who was the head master of Rugby had carefully planned for the molding of Tom Brown's character. Tom had fondly supposed his progress was due largely to his own foresight. Now he could understand that it was by choosing him as a protector of Arthur, thus giving him a new sense of responsibility and trusting him, that the great Dr. Arnold had brought out the best of what was in his scholar's nature.

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5401.

THE SPREADING SEA LAVENDER

Several kinds of Sea Lavender, or Marsh Rosemary, are on our coasts, but this is the common variety found on muddy shores. It is bluish purple.

THE SWAMP LOOSESTRIFE

These spires of pale yellow, red-eyed, tiny blossoms prick out of mossy bogs. In the fall little bulblets in the axils of the leaves drop off and sprout.

THE SEASIDE GOLDENROD

This member of the Goldenrods is found growing near the sea and can be recognized by its fleshy, smooth leaves with unbroken edges, and the heavy shapely flower-heads, with large, golden flowerets.

THE ROCK SAMPHIRE

The fragrant Rock Samphire, with its thick and fleshy leaves and stems, is used for pickling, and makes an excellent relish. Samphire is a corruption of San Pietro, meaning the herb of St. Peter.

THE FLOWERS OF THE SEASIDE

ALTHOUGH there are many plants that flourish within only a few miles of the seacoast, there are some so fond of sand and salt water that they naturally grow at the water's edge or in the salt marshes. Some of them, indeed, are half covered by high tides.

Very many of the plants that thus hug the coastwise beaches have one marked trait, whether they grow in the narrow strip of sand and gravel between the sand-dunes and the seaweed and other jetsam left by the highest waves, or in the ill-smelling, black, salty mud of salt marshes. This is the interesting fact that their foliage, as well, often, as the stem, is very simple in outline, and so glossy and smooth as to feel almost greasy. Many of them are thick, or "fleshy," like the cactus, and some are so swollen as to be quite like cylinders. This is also a characteristic of plants growing on deserts and saline soils, and is a device for securing as small a surface as possible, so as to prevent the precious water in the tissues of the plant from escaping too rapidly through the pores provided for that purpose in the surface of every leaf. The plant on the sea-beach, as well as that on the desert, must be able to grow in sand so hot that one can hardly step barefooted upon it, and through which such rain-water as falls quickly seeps away. Therefore, those plants that have gradually come into the possession of foliage that is able to retain such water as may come to it in the top, are most able to survive in such unfavorable localities in spite of the attacks of the sun and drought.

But these crisp, fat, watery leaves, called "succulent" in books, are tempting to browsing animals, so often these plants are tart, or salty to the taste, while others are very thoroughly and wickedly protected with an armor of most surprisingly sharp prickles.

THE LONG ROOT OF THE SUCCULENT SALTWORT

The Saltwort, *Salsola kali*, is a striking example of both of these traits. It also has another somewhat common characteristic of sand-loving plants—a long, spindling taproot from which the reclining branches spread in a great circle, forming a huge rosette on the strand. The foliage, to all outward appearance, is merely swollen, fleshy supports for needle-pointed spines that occupy all the available space. In the axils the fruits are crowded, each having quaint wings flaring horizontally from the apex. The saltwort belongs

to that great Goosefoot Family, which includes the useful vegetables spinach and beets, as well as certain maritime plants.

THE GLASSWORT TURNS SCARLET IN AUTUMN

Not far from the saltwort, in the low grass, where high tides may flood them, stand ranks of a closely related plant, the Glasswort. Brittle, smooth, spineless and, to all appearance, leafless, they bristle in the green herbage like skeleton plants from which the leaves have all fallen away. As a matter of fact, the leaves have been reduced to mere scales on the round upright branches. In the axils of the upper ones minute flowers are sunken. In summer the glassworts are green, but as autumn approaches they become brilliant scarlet in color.

THE SAMPHIRE, A QUAINT PLANT OF ROCKY SHORES

The name "Samphire," occasionally applied to the glasswort, has been borne much longer by a European plant of rocky shores, a rather quaint umbel-bearer, whose solid stems and leaves become swollen and juicy. In some seaside places it has been so much gathered for making into a pickle that it is no longer to be found. We might think it is a plant without leaves, for it appears to be merely a much-branched and twiggy stem with umbels of yellow flowers. As a matter of fact, the flowers are white, but are very small, and do not show up so strongly as the yellow pistils and footstalks, and the blue-green leaves are so cut up into slender, fleshy, lobed leaflets as to resemble twigs.

SEASIDE HERBS INTRODUCED FROM EUROPE

To return to our Goosefoot Family, we find in it the Orache, a pot-herb, growing originally on European sea-beaches, and now often found in our gardens; and also the fleshy, glaucous Sea-blite with three-angled leaves, a bushily branched herb, which grows indifferently on sandy or muddy beaches, or in the salt marshes.

When we leave this family and its queer plants and unattractive flowers, we are relieved to discover more showy maritime vegetation. There is, for instance, a pretty European shrub belonging to the Oleaster Family, which we sometimes include in our shrubberies, but which is not native to our coasts. It has drooping branches covered with egg-shaped or lance-shaped leaves, that are dull green above, and silvery white beneath, and is called the Sea Buckthorn, or Sallow-thorn. Some of its branches are short, and end in long spines. It bears orange-colored berries, which are tart.

TAMARISKS AND SEA-HOLLIES

Other European shrubs sometimes growing into small trees are the Tamarisks, with wand-like pink-flowered branches, and the so-called Sea-hollies. One that grows on the sand above high water, has a short, thick, branching stem, with broad, roundish leaves that are thick and leathery, and their margins are cut into bold teeth that end in very sharp spines. They are of a gray-green tint and have the appearance of a "bloom" upon them.

THE ROOT OF THE MARSHMALLOW WAS USED FOR CANDY

The pretty furry Marshmallow, that is very closely allied to the hollyhock, is sometimes found naturalized in our salt marshes, escaped from cultivation. Its roots contain a sort of gum or mucilage, used in medicine, and from which the sweetmeats were originally made. The flowers are of a pale rose color and resemble some of the other mallows.

Another European plant that grows about the cliffs, and on the edges of fields that may be above them, is the Sea-campion. This has similar leaves and flowers, but less erect stems than the Bladder Campion, which has become naturalized in this country. The white petals are somewhat broader.

THE SEASIDE CONVOLVULUS OF EUROPEAN SHORES

Another plant that we should recognize if we were abroad is the European Seaside Convolvulus, because its flowers and leaves are similar in shape to those of our field convolvulus, or small bindweed. Its slender stem runs underground like that of the bindweeds, but is shorter and rarely twines around other plants.

THE HORNED POPPY, A TRAVELER FROM EUROPE

On the European sand-dunes grows the fine Horned Poppy, with bold, glaucous leaves and rich yellow flowers, three or four inches across, which constantly occurs in America as a visitor from abroad, springing up in waste places. Instead of its seed-vessels' being the shape of our old red-flowered friend of the

THE ORACHE

This plant, introduced from Europe, where it grows in abundance, flowers from July to October. The whole plant has a reddish tinge. The central branch is erect; the others look as though beaten down.

THE YELLOW HORNED POPPY

On sandy or chalky beaches the Horned Poppy is conspicuous with its large, rich, golden-yellow flowers. The seed-pods that follow the flowers are long, and might be taken for leafless flower-stems.

THE COMMON TAMARISK

This evergreen shrub, with its rose-colored flowers, has a light, feathery appearance. It is largely used as a hedging in seaside gardens in Europe, as it withstands salt winds and protects other plants.

THE JOE PYE-WEED

This great swamp-weed is said to be named for an old Indian, who recommended it for its medicinal virtues. The flaring outline of the stem with leaves and flowers has suggested the name of trumpet-weed.

THE GROUND NUT

There are several plants known by this name, but this plant belongs to the Pea Tribe and furnished food for both the Indians and the early explorers.

THE COCKLEBUR

This odd-looking bush has wide-spreading branches, bearing tufts of many-angled velvety leaves, and curious flowers, succeeded by brown prickly fruits.

THE RED BARTSIA

This plant is not confined to seaside districts, but grows in waste places and fields from Maine to Nova Scotia. The reddish-green leaves and the small pink flowers give the plant a reddish look.

THE BLUE FLEABANE

Though this plant is not a seaside flower, it may often be seen growing near the sea in the north on old walls and other dry spots. The plant is very much branched and hairy. It is rare in Europe.

THE BAYBERRY

These shrubs are conspicuous as masses of dark green, aromatic foliage, growing on sand-dunes along the Atlantic coast. The berries cling after the leaves are gone. The Sweet Fern is related.

THE MARSH ELDER

A tall, glossy-leaved plant is the Marsh Elder, growing in great clumps along the muddy banks of tidal river and shores, with green, tassel-like flowers. It is a near relative of the Ragweed.

THE MARSHMALLOW

The common Marshmallow grows well in marshes near the sea, and is a mass of blossom in August and September. The flowers are rose-pink.

THE BEARBERRY

This evergreen creeps over large areas of sandy soil, upholding its waxen, urn-shaped flowers, and bunches of large, scarlet berries on slender stems.

cornfields, the horned poppy pod is a slender, curved horn, a foot in length.

THE MILKWORT IS A SEASIDE PRIMROSE

The Sea Milkwort, or Black Saltwort, is a sea-beach succulent plant of both the Old World and the New, blooming early in summer. It is a member of the Primrose Family. Though its stems are six or eight inches long, we shall not find them reaching that height above the rock, for they are much inclined to trail or to take a half-erect position. The small, oval, stalkless leaves are in pairs, and each pair is at right angles to the pair above or below it. The white, pink or lavender crimson-dotted flowers are without stalks. It is the bell-shaped calyx that is colored, for there are no petals.

THE SEA-PINK AND SEA-LAVENDER

In the Plumbago, or Leadwort, Family, very closely related to the primroses, is the dainty Sea-pink, or Thrift, introduced from Europe. The name Sea, or Marsh, Pink is also used of several members of the Gentian Family. The Sea-lavender is very common in our muddy salt marshes. Here, again, we have the fleshy leaves, oblanceolate, large, and spreading in tufts from a thick rootstock. Above them, borne on tall, slender scapes, the widely branching flower-heads look like shreds of fog caught on the meadow grasses: for the tiny flowers sit erect in little one-sided spikes on the fragile sprays of the panicle, with hairy, pale lilac petals and calyxes of paper-like sepals. Long after they have ripened their seeds, the flowers still retain their form and some of their color.

ASTERS OF THE BEACHES AND SALT MARSHES

Down in the marshes with the sea-lavender, several little Asters, with slender but fleshy leaves, bloom daily. Another aster with stiff stems and rigid leaves standing out in all directions springs from the sandy beach, and is topped by large and brilliant lilac flowers. Later than these, however, we find in salt marshes a fleshy-leaved form of aster known as the New York Aster, which has very pretty blossoms with rays of palest violet.

THE SEASIDE GOLDENROD AND JOE-PYE-WEED

Near them, at the edge of the marsh, stand the very handsome Seaside Goldenrods with stout stems, plentifully furnished with shining, fleshy, smooth-edged leaves. The flowers are unusually large, of a rich golden color, and bloom on the upper sides of the down-curving sprays of the great panicle. Of course, both of these belong to the Composite Family, and so also does the Joe-pye-weed—a great plant that is common in swamps throughout eastern North America, but is particularly rampant in salt marshes. It grows over six feet high with a strong purplish stem rising through whorls of great long-pointed, toothed leaves, and branches at the top, thus forming a massive pyramid of dull purple or old-rose flower-heads, that makes it the most striking plant of the marshes even when in fruit.

THE MARSH ELDER GROWS ON MUDDY SHORES

The quaint name of the Highwater Shrub, or Marsh Elder, gives a broad hint as to where it may be found. In fact, its sturdy stems spring up just out of reach of the waves on muddy shores. It keeps its glossy, deeply toothed leaves late in the fall. They are somewhat fleshy, and grow smaller and smaller toward the top, until on the flowering branches they are very slender and short, and from their axils droop little heads of green flowers protected by a cuplike circle of bracts. The shrub has a disagreeable rank odor, and looks very much like an overgrown ragweed. This is not surprising, for it is a member of the same family. Another member, and one which promptly calls attention to its presence, is the beach Cocklebur, that has zigzag branches with unshapely rough green leaves, and firm oval burs clustered in the axils, very completely provided with hooked, hairy prickles, as well as a pair of stout, hooked beaks at one end, by means of which they cling persistently to an animal's coat, or to clothing, thus being transported for some distance, and scattering the seed over a wide territory.

THE ODOROUS LEAVES AND BERRIES OF THE BAYBERRY

On the beach, on the sand-dunes, and even far inland, one sees the rounded bushes of Bayberry, or Waxberry. Its rigid, dark green, dull, oblong leaves are resinous and very aromatic, in odor a little like the bay or laurel, as we may discover by crushing them. When the leaves fall, one can see the ripened berries, or drupes, clinging closely to the stems.

THE SEA MILKWORT

Another name for this plant is the Black Saltwort. It grows on the low rocks that are splashed by the sea and in salt marshes. The pink flowers with tiny crimson dots are succeeded by primrose-like fruits.

THE SEA CAMPION

The large white blossoms of the Sea Campion show up well against the shingle of the coasts of Europe, where it blooms all the summer. It is very like the bladder campion, or white bottle, of our fields.

THE SEA CONVOLVULUS

The Sea Convolvulus of Europe is a beautiful plant, with pale rose-colored flowers, striped with red or yellow, almost as large as the great bindweed's. The blossoms open early and close at night.

THE SEA-HOLLY

The Sea-Holly, with its gray-blue flowers, is also called the sea eryngo. It is a stout, prickly plant, with the appearance of a thistle, although it really belongs to the Parsley Family.

THE SEA BUCKTHORN

The Sea Buckthorn is a bushy shrub with leafy branches which end in thorns. The leaves grow on short stalks, and are dotted above and silvery below. The flowers are green, and the fruit is acid.

THE GLASSWORT

The Jointed Glasswort, or Marsh Samphire, is abundant in salt marshes around our coasts, and is sometimes used for pickling in place of the samphire. It was formerly used in making glass.

THE PRICKLY SALTWORT

This hairy and much-branched plant, with its striped and angular stem and prickly leaves, rarely grows higher than a foot. It is common on sandy shores, and was used in preparing sodium carbonate.

THE SEA BLITE

Like the saltwort and the glasswort, the Sea Blite yields an impure sodium carbonate, formerly much used in the manufacture of glass. It is common on muddy seashores, and has a reddish hue in winter.

They look very white, but pick one and scratch it a little. You will find that the whiteness can be scraped off, and that the berry is really dark colored and very wrinkled, and the white substance that covers the berry lies thick in these creases. It looks like, and is, vegetable wax, which without doubt acts as a waterproof coating and prevents the rain and snow from injuring the berry as it clings to the stem during the winter. This wax was utilized by early colonists, who boiled great quantities of the berries, and made candles from the melted wax that floated to the surface. When blown out, the pale green candles exhale a delicious spicy fragrance. The Sweet Fern is a near relative.

KINNIKINNIK, THE PLANT WHICH WAS SMOKED AS A TOBACCO

A very widely distributed plant in the colder regions of the northern world is the Bearberry of the Heath Family. Although it is quite common inland, it grows very often on the bluffs of the northern seacoasts, where its creeping stems gradually overgrow large patches of sand for the comfortable ripening of their bunches of scarlet berries, greatly relished by game-birds. The berries and the pale, waxen flower-bells before them droop close to the earth under the tufted, tough little spatulate leaves that terminate the trailing branches. The plants have been used for tanning; and not only do they furnish a drug, but, when dried, were used by Indians as a tobacco to be smoked alone, or added to the ordinary kind, whence the plant is called "kinnikinnik."

THE GROUND-NUT WAS EATEN BY THE INDIANS

Still another plant of great value to the Indians was the Ground-nut. Like the bearberry, it is often found far inland, but in moist rather than dry soil. It seems to be particularly prevalent along the coast, just keeping clear of brackish water; and roadside thickets are wreathed with its far-reaching, twining vines, and fairly smothered with its balls of dull purple and old-rose pea-like flowers that are curiously twisted and give out a delicious odor of violets. Its chief interest, however, lies in the dusky-skinned squarish tubers that sometimes are as big as pecans, and often lie in strings like the beads of a necklace, separated by slender rootstocks. These were a favorite food of the Indians, who resorted in parties to the swamps where they could find quantities of these strings easily to be dug up. They probably tasted not unlike potatoes when boiled. They were almost the only food that the Indians, and their white captives, and the missionaries who lived among them, could find in times of famine.

The Indians also liked wild fruits. They ate them fresh, put them into their porridge, and dried them for pemmican. They were especially fond of plums, and doubtless made many excursions to those shores where the Beach-plums grow, in spring wreathed with small white flowers, and in the fall strung with quantities of puckery, rather acid fruit. We can imagine that the children played with the pits, and we know that their elders gambled with them. Nowadays delicious jam is made from the thin flesh of beach-plums.

Near these low shrubs will be found the thick Groundsel bushes, or Baccharis, in the fall whitened by countless tufts of silk-like threads, which grow on the seeds, and are meant to cling, like cotton-fluff, to passing animals. The fruits are carried on the wings of the wind. Near by one can find on hot sand-dunes violet-colored asters with thick fleshy leaves. In moister land grow the low Sabbatias, which are often called Sea, or Marsh, Pinks, with flesh-pink flowers like stars, with inner stars of deeper color painted on the bases of the petals.

THE SEAWEEDS LIVE ALMOST ENTIRELY IN WATER

While we are on the shore we shall, of course, become interested in the seaweeds. As they are not flower-bearers, they scarcely come within the bounds of this article. They are plants that live almost entirely in water, reproducing themselves, not by seeds, but by minute spores often too small to be seen without the aid of a microscope. Those which grow attached to the rocks inshore get uncovered at low tide for a few hours at a time, and if the tide did not come back soon they would dry up and be killed. These seaweeds have no real roots, for what look like roots are only suckers that hold them fast to the surface of the rock; they never penetrate it, and they draw their food entirely from the water through the surface of their fronds. The large ones attached to the shore rocks have thick, leathery fronds of an olive color.

THE NEXT STORY OF PLANT LIFE IS ON PAGE 5387.

COTTON MILLS NEAR THE COTTON-FIELDS

Some of the largest cotton mills are close to the cotton-fields. This is a view from the air of the Proximity Mills on the outskirts of Greensboro, North Carolina. The mills shown above make 150,000 yards of denims a day which are used chiefly for overalls.

These looms in the White Oak Mills, also at Greensboro, are not the ordinary sort, but are automatic. When one bobbin of yarn is exhausted another drops into place from a creel which you can see both on the right and the left. If a thread breaks, the whole loom stops. Such looms enable an operative to produce a much greater quantity of cloth. Photos, courtesy Greensboro Chamber of Commerce.

Picking cotton in a southern cotton-field.

HOW COTTON BECOMES CLOTH

COTTON is the most valuable fibre in the world. Its uses are so many that we cannot begin to tell them all. We wear cotton clothing sewed with cotton thread, tie up cotton bags with cotton string, and are sheltered by cotton tents or awnings. We may sleep between cotton sheets, on a cotton mattress, under quilts padded with cotton. The doctor binds a cotton pad over a wound with a cotton bandage. It is also a source of cellulose of which we tell you elsewhere.

The cotton plant grows in the warmer parts of the world, in North and South America, in Egypt, China, India, Australia, some part of Asiatic Russia, and on many of the warmer islands of the world. Sometimes it is a plant, sometimes a shrub, and in some countries a small tree, which does not die when the cooler weather comes. There are many species, but only three or four are of any importance.

Though cotton is a native of the tropics, it produces best in temperate climates which are not too cold or too dry. The southern part of the United States produces the most and also the finest cotton. India grows a great deal, but it is hard to spin; while Egypt grows a fine quality, but there is too little land in Egypt to grow very much. The other countries do not grow enough for their own use.

The plant as it grows in the United States is an annual; that is, it dies in the fall, and must be planted again in the spring. It is from two to six feet high, and belongs to the same family as the hollyhock. The flower is very much like that of the hollyhock, and is cream-colored when it opens, turns pink the next day, and drops off on the third. It leaves a tiny boll, which grows until it is about the size of a walnut. In it the fibre is tightly packed. When ripe, the boll bursts open, and the snowy white fibre hangs out.

Men, women and children, white and negro, go through the field pulling out this fibre. The fibre clings tightly to the seeds, and must be separated before the cotton can be used. Before the invention of the cotton-gin by Eli Whitney the fibre was separated by hand. This was such slow work that very little was grown. A cotton-gin could do the work of dozens of people, and the amount of cotton grown has increased very greatly. After it has been ginned, the cotton is packed into bales, which weigh about five hundred pounds each, ready to be sent to the

cotton mills, about which we shall tell you in a moment.

Formerly most of the seeds were thrown away, but it was found that they contain a very valuable oil. Now the hulls are taken off, and the seeds are pressed to remove the oil. Sometimes the seeds are cooked first. This oil is then refined, and probably you have eaten it with salad many times. It is much used in cooking and also in making soap and paint. The meal from which the oil has been pressed is used as food for cattle and in making fertilizer. The hulls also are fed to cattle.

WHY THE UNITED STATES BOTH SELLS AND BUYS COTTON

Though there are hundreds of cotton mills in the United States, they consume just about half of the cotton that is grown in the country. The remainder is sent to all parts of the world. Mills in Europe, Japan, Canada and other countries use much American cotton. On the other hand, some from Egypt is brought to the United States for a special reason. If you have ever looked at a tuft of cotton, you probably saw that it is a mass of tiny fibres tangled together. If these fibres are very short, only coarse yarn and cloth can be made from them; while fine yarn and thin cloth are made only from cotton with a long fibre. The fibre of Egyptian cotton is longer than that of most American cotton, and therefore some Egyptian cotton is brought across the ocean to be used in making knit underclothes and hose.

There is a kind of cotton grown in the United States which has a longer fibre than the Egyptian. It is called Sea Island cotton, but it will grow in only a few places. The boll-weevil, a little insect which attacks the cotton plant, has almost stopped the growth of this variety. Cotton somewhat similar, called Pima cotton, is grown on the irrigated lands of the Southwest. The fibres of these cottons are very fine, soft and long.

WHERE THE COTTON MILLS ARE TO BE FOUND

England was the first important cotton-manufacturing country, and still produces the finest yarn, but the United States spins more. The cotton mills of the United States are not scattered over the whole country. North Carolina has the most mills, but many of them are small. South Carolina also has many mills; but Massachusetts has very large mills, and has been the leading state in the industry, followed by the Carolinas in the order named. New Hampshire, Rhode Island, Georgia, and Alabama also have many mills, and there are some in other states. Though Canada must import all her cotton, there are quite a number of factories, and millions of dollars are invested in the industry.

The cotton must go through many machines before it becomes cloth. A cotton mill seems to be full of noise and glittering steel, and our pictures tell the story better than we could do in many pages of words. If you will study them, and the descriptions under them, you will begin to see how wonderful a piece of cloth is. The cotton is first twisted into threads called yarn, and these are woven into cloth. The cotton must go through several machines before it becomes yarn, however, for the fibres must be straightened out and laid beside one another.

HOW THE COLORS COME TO BE IN THE CLOTH

The colors in cloth may be produced in several different ways. Sometimes the cotton is dyed before it is spun; sometimes the yarn is dyed; and sometimes a pattern is printed on the cloth, like a picture on paper. Stripes are sometimes printed, and sometimes are made by using a few colored threads. Look on the back of the cloth and you can decide whether the stripe was woven or printed. On most printed cloth the color does not come through the cloth, or at least does not show clearly.

Every one of you has seen a spool of thread such as your mother uses. This is made from many fibres of cotton twisted together, and then four, six or more of these are again twisted together to make the tiny thread you see. This will show you how fine a single fibre is. An ordinary thread is composed of hundreds of delicate fibres twisted together.

Not all the cotton used in the world is manufactured in these great mills. In India much of what is grown there is spun on a simple wheel, and woven into cloth on hand-looms very much like those which were used hundreds of years ago. Some of these workmen can make cloth as fine as that made on machines. The muslins of India have been always famous.

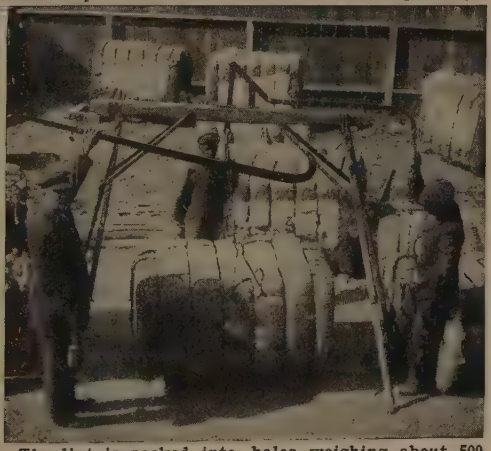
THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5307.

COTTON BEGINS ITS GREAT CAREER

The finest, longest and silkiest growth, used for best goods, is Sea Island cotton. Cotton grown in the Nile Delta, here arriving at Cairo on camels, is the nearest rival to Sea Island lint.

Cotton is a hair covering the seeds. From the flower springs the boll, which, on ripening, bursts and displays the seeds and cotton. The destructive boll-weevil pest threatens America's cotton supremacy.

The lint is separated from the seeds in the ginning machine. American cotton yields from 30 to 35 pounds of lint from 100 pounds of seed cotton.



The lint is packed into bales weighing about 500 pounds each. The seeds are crushed and yield oil and oil-cakes.

CLEANING THE COTTON AT THE MILLS

On arrival the bales are broken open, and the matted lumps are thrown in huge armfuls into the trough of a bale-breaker. Now begins the first process of cleaning the cotton.

Spiked or fluted rollers tear the matted fibre apart and pass it forward to an opener machine, which carries on the work of cleaning. Then the wide stream of fluffy cotton passes under rollers and is wound off in a lap, or fleece.

THE CYLINDER WITH MANY TEETH

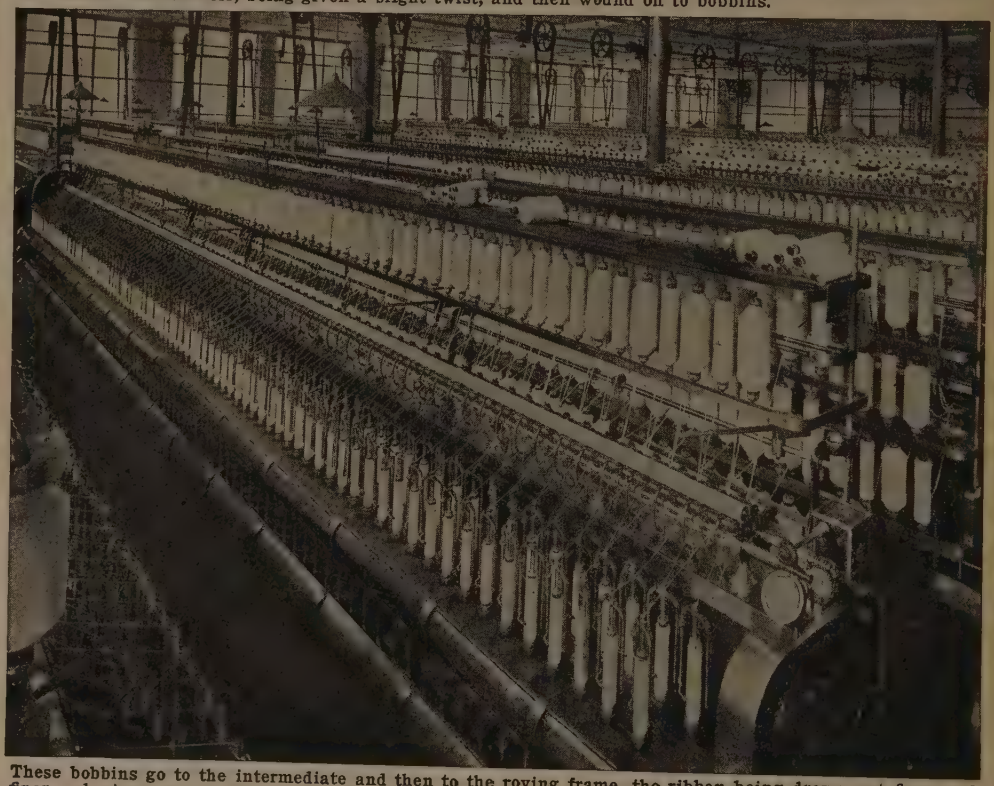
The laps pass into a picker, where four may be rolled into one. After a final beating and suction-cleaning the condensed broad white lap is rolled out. It is now of even thickness and weight throughout every yard.

Good yarn is impossible unless carding is well done. On a cylinder needle-pointed teeth tease out the lap fibres into parallel order, making a fine veil of pure white cotton. This passes through a tube and thus is pressed into a sliver.

Then the drawing frame takes perhaps six slivers and rolls them into one, doing this again and again, until 216 slivers may be combined into one, uniform in weight and thickness, with its fibres as parallel as can be made.

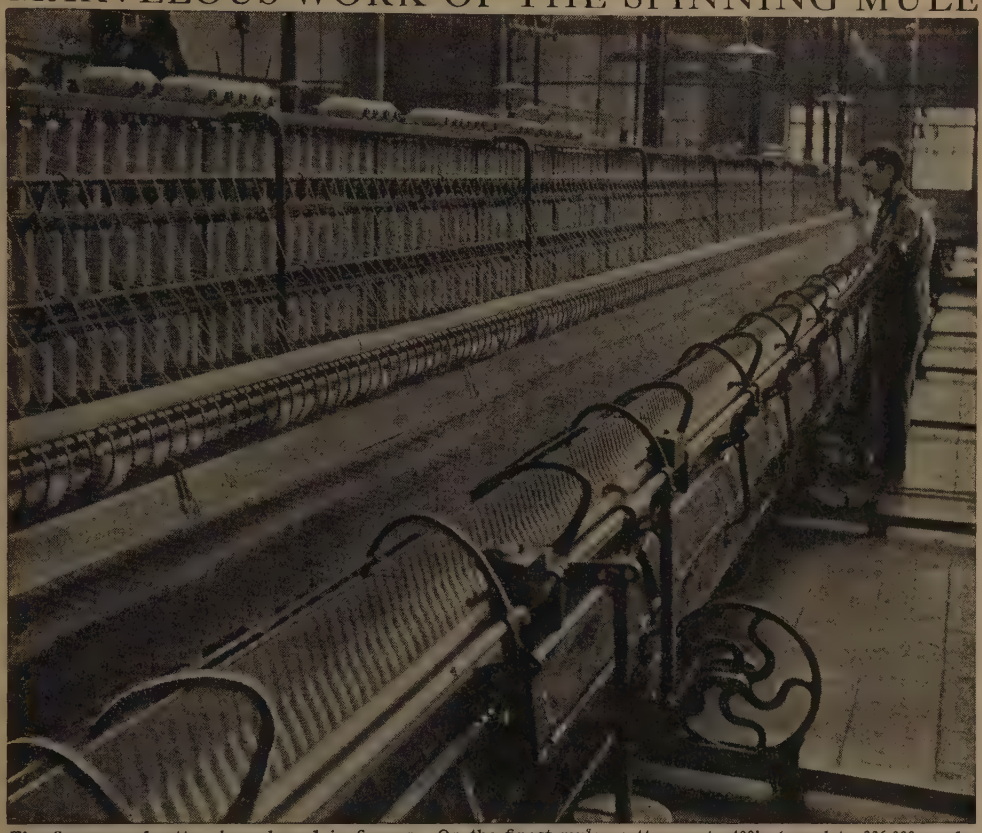
THE YARN IS PREPARED FOR SPINNING

From the drawing frame the cotton comes in cans to the slubbing frame, and there begins the twisting of the cotton from a thick sliver to a fine thread. Passing between rollers, the sliver is gradually drawn out thinner and thinner, being given a slight twist, and then wound on to bobbins.



These bobbins go to the intermediate and then to the roving frame, the ribbon being drawn out finer and finer and given more twist, finally being wound on to bobbins. The real process of spinning now begins upon ring-spinning or mule-spinning frames.

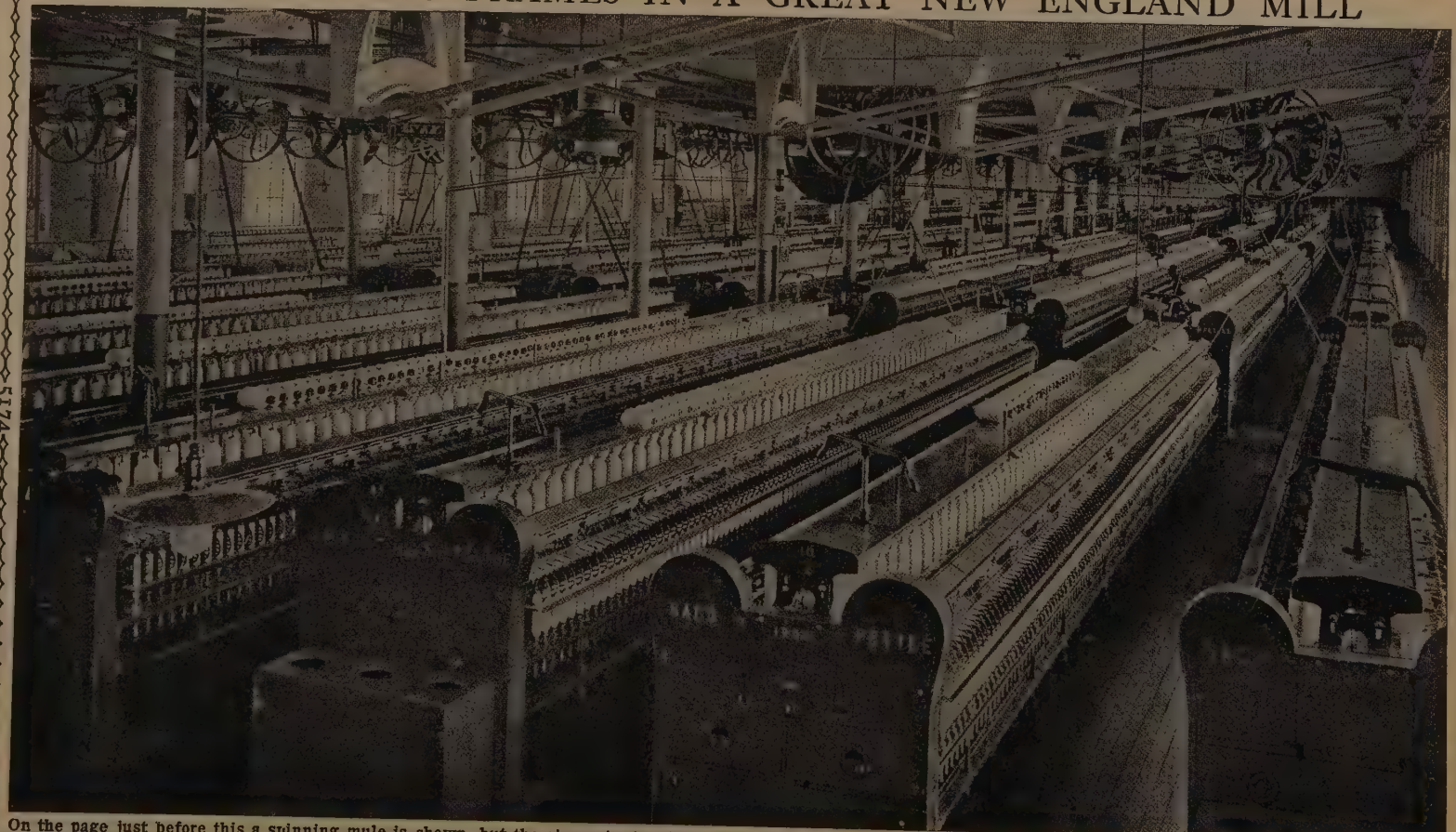
MARVELOUS WORK OF THE SPINNING MULE



The fineness of cotton is reckoned in figures. On the finest mules cotton up to 400's (equal to 336,000 yards, or about 190 miles, to the pound) can be spun on to spools known as cops without breakages. For experimental purposes a pound of cotton has been spun into 1,000 miles of yarn, but cotton used for the finest goods averages about 95 miles a pound. Such is the marvelous work of the mule, which may be 120 feet long and mounted with 1,300 spindles, each spinning 64 inches of thread in about 15 seconds.

When the thread comes to the weaver, the yarn from the spinner is wound from the mule cops on to warping bobbins. Two or more threads may be twisted or doubled together to make strong thread: gassing or singeing removes loose fibres that would impede its passage through the eye of a needle.

RING-SPINNING FRAMES IN A GREAT NEW ENGLAND MILL



On the page just before this a spinning mule is shown, but the ring-spinning frame is quite as important. Finer and more even yarn can be spun upon mules, and for some purposes it is preferred, but most medium and coarse yarn is spun upon ring frames, which can produce more in the same length of time. This is the spinning-room of the famous Pacific Mills, at Lawrence, Massachusetts. This is one of the older factories, and is also one of the largest in the United States.

THE THREAD IS MADE READY FOR WEAVING

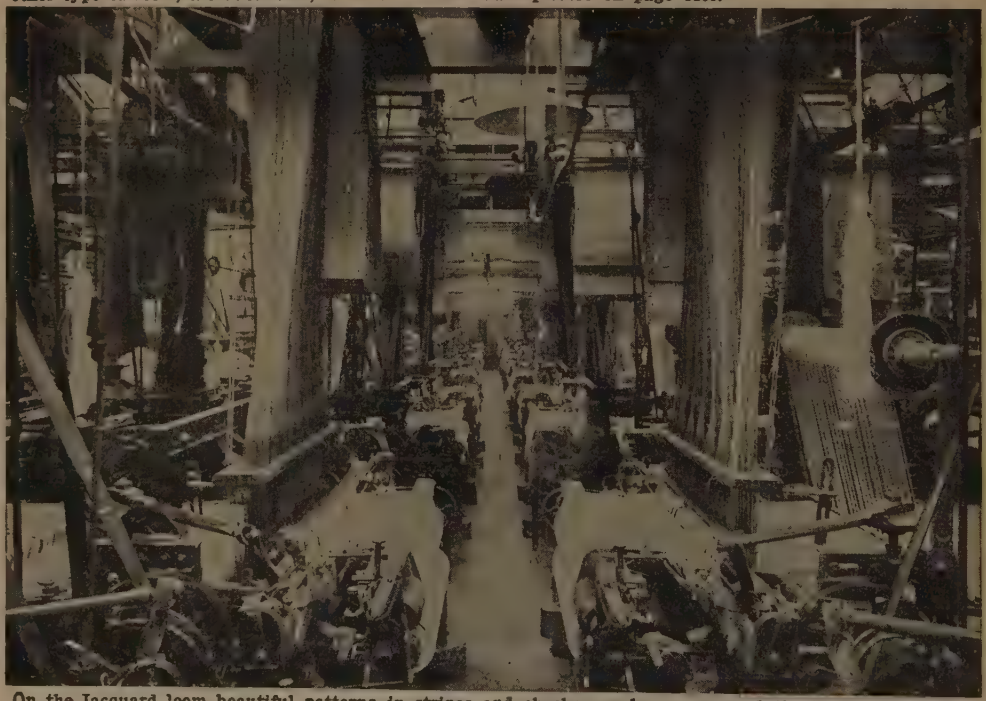
The warp threads, to run from end to end of the woven fabric, are arranged parallel and with precise length. The number of bobbins necessary to fill a beam are mounted in a frame, or creel, in a warp-beaming machine and wound on a beam or giant bobbin.

To withstand the tension of, and chafing in, the loom, warp threads that have not been doubled are sized in the slasher sizing machine to give them strength. Weft yarn is not sized.

When dry, warp threads have to be threaded individually through the eyes of the healds, or harness, controlling their movement in the loom, and also through the dents of the loom reed.

STREETS OF LOOMS IN A WEAVING-ROOM

Each branch of the textile industry has its own type of loom, but the ordinary loom is that in widest use. In weaving-rooms sometimes thousands of looms are at work together with deafening roar. Another type of loom, the automatic, is shown in the lower picture on page 5166.



On the Jacquard loom beautiful patterns in stripes and checks can be woven, and the border and centre designs for quilts or tablecloths. The perforated card at the top is punched with holes corresponding to the pattern, and these allow the loom needles to penetrate when so required by the pattern.

A boat may be weighted at the bottom to lower its centre of gravity (B) below the centre of gravity of the water the boat displaces (W). The boat will rock, but not capsize. If, by putting a weight on deck the centre of gravity rises to B, above W, the boat easily capsizes.

THE PULL OF THE EARTH

THERE is a term connected with gravity which we must understand, and which we shall find will throw light on what we have already learned about equilibrium; this is the term Centre of Gravity. In the case of any object there must be, as we can imagine, a point around which the whole of it could be balanced. The amount of matter in the body would be so disposed all round that point that if it were hung by a thread at that point it would stay at that position. It would balance perfectly around that point. It is as if all the matter of the body were really massed together at that point, which we call its "centre of gravity." Probably, a better term would be "centre of mass."

If we have a round object made of the same material throughout, the centre of the ball will be its centre of gravity. Now, suppose we take a square board with the intention of finding its centre of gravity, assuming, of course, that the board is made of the same material and is of the same thickness throughout. We want to fix a single thread to the board at one point so that when suspended by it, the board will swing evenly. That point will, of course, be the centre of gravity.

We all know what a diagonal is—the line joining opposite corners of such a board. If we draw the two diagonals, the point where they cross each other is the centre of gravity. That is all very well, but it is not quite so easy to find the centre of gravity of a body that has an irregular shape. Suppose, for instance, that, instead of a square board or a round one, we had one of a very irregular shape, and wished to find the point at which we could suspend it by a string so that it would swing evenly. Let us pick up the board, tie a string somewhere to its edge, and let it hang steady. If we draw a line straight down the board continuing the line of the string, the centre of gravity will be somewhere in that line. Now, it is a very interesting fact that we should be able to say this for certain, and we must try to understand why we can do so. When the board hangs steady from the string, there must be, as in any other case of equilibrium, a balance of forces.

These forces, of course, are the earth's gravity pulling downward and the tension of the string pulling upward. As these two forces act equally and oppositely, the centre of gravity must be somewhere in the line of them. If the centre of gravity were to one side of the line of the string, we should have what is called a *couple* of forces. Gravity and the pull of the string would be acting, not in the same straight line, but oppositely, in parallel

lines, and this couple would mean that the board was twisted until the centre of gravity *did* come to lie under the string. The only real way to understand this—which is perfectly simple—is to draw a diagram for ourselves as we read it. First we can draw a diagram showing what really happens; then we can draw a diagram showing the board with the centre of gravity to one side of the line downward from the string, and then we can see how the couple of forces is bound to rotate the board, or turn it around.

How we may find the centre of gravity of a board or a plate

We laid down no condition as to the point from which the board was to be hung. No matter from where it is hung, what we say is true. Suppose that we hang it up again from some second point and then draw the line downward from the string; the centre of gravity will be somewhere in that line, as we said before, but we know that it is also somewhere in the first line we drew. There is only one point which is common to both lines, and that is the point where they cross each other. The centre of gravity of the board is there. If we have made our experiment carefully, and if we can attach a wire or a thread to the board exactly at that point, we shall find that the board will hang evenly around it on all sides. Of course we can make the same experiment with a plate or any other flat object.

If we take such a complicated thing as the human body, we certainly cannot easily find its centre of gravity. The body is very irregular in shape, and it is made of different parts having various densities. Nevertheless, it has been possible by long study to find one deeply interesting fact. It is one of the most important facts of the whole body, because upon it depends the erect attitude, which means the freedom of the hands from purposes of walking, and the chance to make use of them for so many other purposes.

The great joint that divides our body into two halves

If we look sidewise at anyone walking, or if we look sidewise at a skeleton, we can see that the hip-joints make the great joint which really divides the body into an upper half and a lower half. As we know very well, the trunk and head and arms can swing backward and forward upon the lower limbs at the hip-joint. Suppose a line were drawn straight down to the earth from the centre of the hip-joints of a person who is standing. We have here a problem, as we can readily see, which is very much like the problem of the board hung by a string. In this case the support is below instead of above, but that does not really matter.

If we understand the principle of the centre of gravity, we can see for certain what must happen to the upper part of the body, as it is supported through the straight line down to the earth, from the hip to the heel. If the centre of gravity of the trunk and head lies so that the line dropped from it to the earth falls in front of the line from the hip-joint to the earth, the body must topple forward. The centre of gravity of the upper part of the body is found in front of the line through the hip-joints in the case of all animals, and that is why they have to walk as they do. Only by muscular effort and a certain degree of skill can a horse or a dog walk on its hind legs, and neither can maintain the position more than a few minutes at a time.

Why it is difficult for babies and animals to stand upright

Even in the man-like apes, including the wonderfully erect gibbons, which we may see at a zoo, the centre of gravity lies in front of the hip-joints. They can walk very well for a time, but it costs them labor, and they can scarcely stand. A very small baby is in exactly the same plight as these animals.

But as the baby grows the curve of its backbone changes in such a way that the centre of gravity of the trunk lies, as it does in all of us, behind the hip-joints. The two lines dropped to the earth, one from the hip-joints and the other from the centre of gravity, are parallel, and the forces acting through them make a couple, so that the trunk and head tend to rotate and roll backward to the ground at the hip-joints, leaving the legs erect. That, however, is a thing which we never saw accomplished even by the most skillful acrobat.

It is prevented by the special development in our bodies of two huge bands of fibres, one in front of each hip-joint, which prevent the trunk from rolling backward under the influence of gravity. This beautiful arrangement means that, instead of standing upright only by muscular effort and careful balancing, we can do so in virtue of self-acting mechanical principles.

WHEN A THING IS STEADY AND WHEN IT IS UNSTEADY

We have already studied the various kinds of equilibrium and learned their names—stable, unstable and neutral; but, of course, we ought to be able to define the exact causes which make the difference between the equilibrium that is stable, or steady, and those that are neutral and unstable. Our study of the centre of gravity can explain this. The simple law is that anything is in a state of stable equilibrium when the centre of gravity is raised by any disturbance, but it is in a state of unstable equilibrium if anything that disturbs it lowers the centre of gravity.

All this is quite plain if we think of the centre of gravity as the place where all the stuff of the body may be supposed to be collected. If anything is going to raise that point, as, for instance, when we push against something hung from a string, then, when the force which raised it ceases to act, gravity, which is always acting, pulls the body back to where it was before. This is true of any case of stable equilibrium, such as that of the slightly tilted tumbler. But, of course, if the displacing force pulls down the centre of gravity, then, when it ceases to act, we cannot expect the body to return to its original position. There is nothing to make it do so; on the contrary, there is gravity to prevent it.

AN ACCIDENT THAT HAPPENS WHEN MEN FORGET THE LAWS OF BALANCE

Questions of equilibrium and centre of gravity are of the gravest practical importance whenever the balancing of anything matters. Take, for instance, one of the most common and fatal of accidents, which happens somewhere or other almost every day in the year. We often hear that a rowboat has been upset and someone has been drowned. Except where the boat has been in a rough sea, it is safe to say that in every such case someone has been very foolish. There is a simple rule of safety which we all ought to know and act on, or we may be responsible for the loss of one or more lives. The rule is that not more than one person at a time should stand up in a rowboat, and the lower even he crouches when he moves about, the less danger there will be.

We see that this is a problem in equilibrium, and the whole question of equilibrium depends upon the centre of gravity. If the centre of gravity of the boat were in its keel, as in the case of those little toys with half a bullet at their base, then the boat could not be so easily upset; it could be tilted or turned upside down, but it would right itself at once. This is a case, of course, of stable equilibrium, where any disturbance means the raising of the centre of gravity. When we build what is called a lifeboat, we provide it, among other things, with a heavy keel, which means that the centre of gravity is kept so low that, with the help of other arrangements, the boat, even when it is upset, has the power to right itself. But in an ordinary rowboat there is no heavy iron keel, and the greatest factors in determining where its centre of gravity lies are the bodies of the occupants.

WHY A ROWBOAT CAPSIZES WHEN PEOPLE STAND UP IN IT

As soon as we stand up, the centre of gravity of the boat is raised, and any disturbance is likely to lower it, which means that the boat goes over. If two persons stand up together—especially if there is no one else in the boat—the risk is very great indeed. The accidents that cause the loss of so many lives every year are usually due to two persons' standing up in a small rowboat, in defiance of the laws of equilibrium.

It required a great deal of experiment and labor to discover how to make a boat which would have its centre of gravity so placed that practically nothing could upset it. The great life-saving services have such boats, and probably the most essential things about them are the lowness of their centre of gravity. There are other qualities, such as the power of righting themselves when upset. This makes the modern lifeboat perhaps the most wonderful vessel that man has yet put upon the water, small though it be.

All these questions apply, of course, to great ships as well as to small ones, and it is a matter of the utmost importance that the weight of a ship be rightly distributed. It would be very easy to build a ship so that, when a wave made it roll, its tendency would be to roll over still farther and overturn.

HOW THE BALLAST OF A SHIP PREVENTS IT FROM TURNING UPSIDE DOWN

Many of us have been in a ship at some time or other, and know that, when it rolls to one side because of a wave, it rolls back again. It may never have occurred to us why it does this. Now that we have

learned Newton's first law of motion, we shall naturally ask this question. The wave started the ship moving in a certain direction; according to Newton's first law, the ship must go on moving in that direction until something stops it. When we look into the matter we find that the weight of the water which the ship has displaced acts upon the ship and tends to right it; but for this to happen—and no vessel could live in anything but the smoothest sea if it did not happen—the centre of gravity of the ship must be low down. We see to this by having the ship's hold filled with ballast, something dense and heavy, which lowers the centre of gravity of the whole ship.

If for any reason the ballast were taken and thrown out of the ship, the result would be the same as that of standing up in a rowboat. It means that the centre of gravity of the ship is raised, and this means that the equilibrium is less stable and that it is therefore much more likely to be overturned than it was before.

Long experience has enabled men who build ships to understand and master these principles in practice, so that, as we have seen, such a vessel as the modern lifeboat is scarcely capable of being improved. In recent years, however, men have been trying to make new things the success of which depends upon the laws of equilibrium.

THE SUBMARINE AND THE AIRPLANE AND THE LAWS OF EQUILIBRIUM

Submarine boats are an instance of this, and most of the difficulties have been mastered in this case; but it is the making of vessels to fly in the air that causes us the greatest difficulties. It is a great mistake to suppose that anyone has yet accomplished the feat of making a flying machine whose equilibrium can be relied upon no matter what the wind is doing. This will be quite plain if we go back to our principles. They are very simple, but they apply everywhere. We know that all motion depends upon forces; we know that all rest and all states of balance depend upon the relations between forces; and we know that there is a constant force of gravitation always acting, and always acting equally.

So long as we have only gravitation to reckon with, our problem is simple. Anyone can learn to make a boat that will float on still water, or a balloon that will stay right side up in still air, or even a toy flying bird that will do the same. The difficulty arises when we have to reckon with other forces which vary to any degree in their direction and in their strength. That is the problem for the machine that is to fly in the air no matter what the air is doing. The case is made specially difficult by the fact that, if the machine is to carry passengers, it must retain its right position always; it cannot be allowed to turn turtle and then right itself. The airmen who loop the loop and do other daring tricks are strapped in so that they cannot fall out.

A similar problem, but one that is not quite the same, has been perfectly solved by birds and by many insects. The bird is subject to all the laws which we have discussed: gravitation is constantly acting upon it; the pressure of the air downward and of the air in motion, which we call wind, acts upon it also.

The bird has solved the problem of making power in itself that will keep it up even though the specific gravity of its body is greater than that of the air. Now that problem has been perfectly solved by man in modern flying machines. This is not to say that man has made, or ever will make, engines that have as much power in proportion to their weight as a bird's muscles have. But the difference is only one of degree. There yet remains the thing which the bird can do and which we cannot do, and that is to fly and remain in almost any state of the air. Long and careful study has been made by many observers of the manner in which the bird balances itself. Photography has been called in for this purpose, and something has been learned by moving-picture studies, but so far as we can learn at present, it seems that the success of the bird is a success which only a living machine can achieve.

We must not leave the subject of gravitation without referring to what is perhaps the most important of all the questions it raises—much more important even than the question of flying machines or the floating of boats. If it is true that here is a force which acts forever, tending to pull every particle of matter in the universe toward every other particle, why does not all the matter in the universe collect into one great solid ball? Now, there are two possible answers to the question, and both must be carefully considered and explained.

THE OLD IDEA THAT EVERYTHING MUST HAVE A BEGINNING AND AN ENDING

It might be that this process of gathering together all the matter in the universe under the influence of gravitation was indeed going on, and had been going on since the universe was first made, but that there had not yet been time enough for it to result in gathering everything together into a solid ball. This has in it the ideas of beginning and ending, which people have always been inclined to believe, and which at first most of us will think must be true.

Not very many years ago these ideas of beginning and ending were supposed to be strongly supported, not only by the existence of the law of universal gravitation, but also by the behavior of heat and power in the universe. Men thought that the universe was like a machine which had been wound up and set running, and in course of time must run down.

These pictures show how we may find the centre of gravity of any flat object. Suspend it from any part of its edge, and when it comes to rest draw a line in continuation of the line of string. Now suspend the board from another point and draw a second line. The centre of gravity is situated exactly where the two lines cross.

A great scientist declared that though we could not name or discover them yet, there must be other forces in the world which acted in the opposite direction to those we knew, such as the force of gravitation, and that the history of things in general must be a rhythm, like a wave going on and on forever, "from everlasting to everlasting," as the Bible says of God.

Of course we need not be told that if what we have asserted about gravitation is true, and if there is no other force opposing it, it *must* at last have the consequence of gathering together all the matter in the universe. But we are now beginning to know something of the wonderful forces, also always at work, which act in other directions.

For instance, men have lately proved to absolute certainty the existence of a force which is exerted by light, by radiant heat and by other forms of radiation, which are known as *radiation pressure.* Everyone has heard of gravitation and very few people have heard of radiation pressure, but the one is just as important as the other.

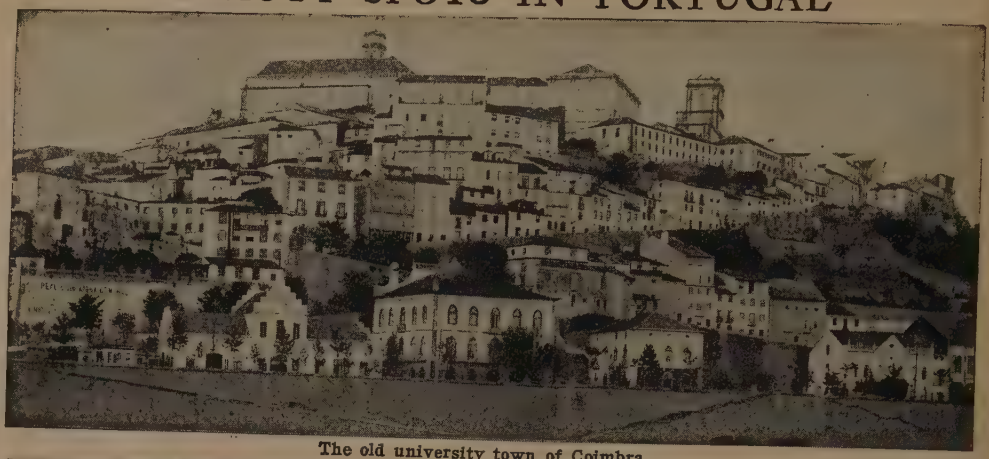
This pressure acts in exactly the opposite direction to gravitation, and though under the conditions we know best gravitation is much the stronger and has its way, yet under other conditions, which are just as common in the universe taken as a whole, radiation pressure is stronger than gravitation and has *its* way. So we may think of the universe as balanced.

Perhaps you have heard of the so-called "theory of relativity," advanced some years ago by the famous scientist, Professor Albert Einstein, as an explanation of many puzzles of the universe. This theory, which is generally accepted today, has wrought quite a change with the older "classical" physics of Newton. Unfortunately this theory cannot be explained in words either to young people or to grown-ups, for it can only be expressed and understood by means of complicated mathematical symbols. We mention it here chiefly because you may read or hear about it some time and will want to know something about it.

Such theories—attempts to *explain*—important as they are, do not, of course, actually change the manner in which things *behave.* All the things about which we have told you in this story—about the way in which things behave—will always remain true, though our ideas about *why* they behave as they do may change. So we need not bother our heads very much about relativity or other theories now. You will study them in college.

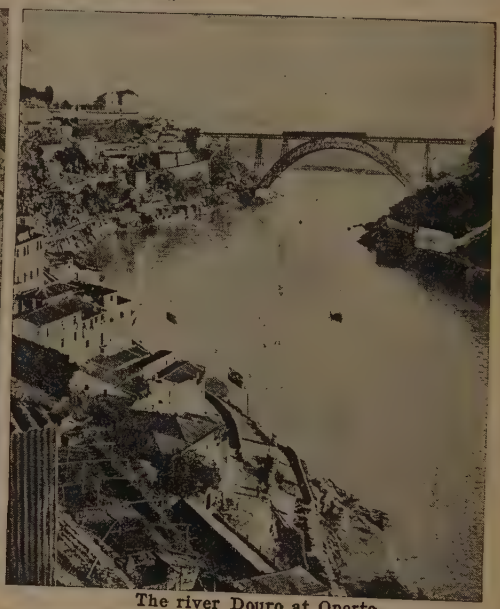
THE NEXT STORY OF THE EARTH IS ON PAGE 5285.

BEAUTY SPOTS IN PORTUGAL

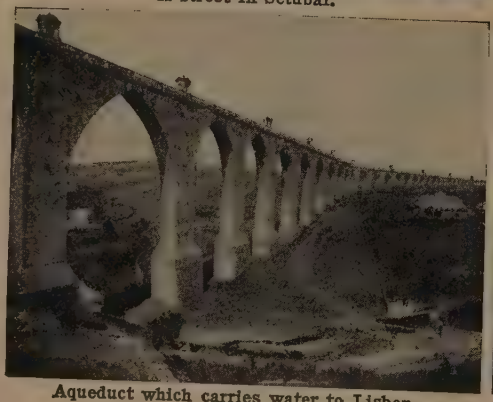


The old university town of Coimbra.

A street in Setubal.



The river Douro at Oporto.



Aqueduct which carries water to Lisbon.

Roman Temple of Diana at Evora.

Photos, courtesy of The Exclusive News Agency and others.

Praca do Commercio, Lisbon, as seen from the Tagus.

THE STORY OF PORTUGAL

FOUR hundred years ago Portugal was one of the world's great powers. She attained her high position very suddenly by her enterprise in exploration and discovery.

To-day, when her once extensive Empire has lost Brazil, which had a population greater than the homeland itself, Portugal still has a population of 14,437,000, made up of six and a half millions in Europe, and nearly eight millions in Africa and the Far East, where she was appointed to rule by the pope.

Though Portugal in the day of her greatest influence never quite rivaled the power of her neighbor Spain, and for a time was subject to Spain, she has preserved many more of her overseas possessions than Spain has been able to retain of the old Spanish dominions. Like Great Britain, France and Holland, her lands overseas far exceed her European area.

Geographically there is no reason why this Atlantic province should remain distinct when the other states of the peninsula have united. Its mountains are the ends of the ranges of Spain; its chief rivers are the useful lower courses of the rivers of Spain, and originally the people inhabiting Portugal were of the same races as those which occupied Spain. That is, they were of the stock known as Iberians, followed by Celtic tribes, and closely resembled the Asturians and Galicians of northern Spain. Later they were conquered by the Romans, and adopted the Roman language, which, as time went on, was changed, by local usage, into the Portuguese development of the Latin tongue. As in Spain, invasions from the north brought Alans, Suevi and Visigoths, but did not alter the foundations of language laid by the Romans. Then, in A.D. 711, the Arab invasion from Africa placed the land under Mohammedan rule.

Portugal was under Moorish government for over three hundred years, and its southern parts for more than four hundred years. To this day the Portuguese people of the south bear visible traces of a partly African origin, though the artistic culture of the best days of the Moorish civilization is not as evident there as in southern Spain. When Lisbon was finally freed from the Moors, in 1147, a band of English crusaders helped Alfonso I in its capture.

This Alfonso was the founder of the Portuguese kingship in a line that ruled for four hundred years. His son Alfonso, reputed to be a giant of seven feet, changed the countship into a king-

ship, and gained such a name for bravery that his fame was preserved in Moorish legends as widely as in Portuguese history.

The Burgundian line of kings proved to be a vigorous ruling race. Besides Alfonso I, conspicuous members of the family were Sancho I, who developed the town life of Portugal; Alfonso III, who entirely freed Portugal from all claims of suzerainty by the northern Spanish state of Leon; and Diniz, the farmer-king who wisely developed agriculture, which had suffered from the expulsion of the Moors, and who made a commercial treaty with England. Diniz, who was a poet of some distinction, also founded, in 1290, the university of Coimbra, which is still the one seat of higher learning in Portugal.

Prince Henry the Navigator, and the Early Portuguese Voyages

Pedro I also signed mutual trade covenants with the English. And his son John I, whose succession to the throne was challenged by the Spanish kingdom of Castile, was aided by five hundred English archers in a victorious battle which firmly established Portugal against the rivalry of Spain. Later, John of Gaunt, son of Edward III of England, supported John of Portugal with five thousand English soldiers, and the Portuguese king married a daughter of the English prince. John, who had been elected king by the Portuguese parliament, reigned forty-five years. And it was his son, Prince Henry the Navigator, who inspired and planned the splendid series of Portuguese voyages which discovered the islands in the South Atlantic Ocean, made known the west coast of Africa, rounded the Cape of Good Hope, and enabled the Portuguese king Emanuel to declare himself, in the year 1500, "Lord of the conquest, navigation and commerce of India, Ethiopia, Arabia and Persia."

Half the Portuguese boundaries are the rolling waves of the Atlantic, and even before the kingdom had settled down, the people had begun to listen to the insistent call of the sea, which is ever felt by those who dwell beside it, and had built ships fit for more than coast voyages. The story of how the Portuguese enlarged their borders over the neighboring western islands, and how they showed the way to India round the Cape of Good Hope, we read on page 89.

In her wars with the Moors, which enlisted the sympathy of the nations of Christendom, and in her resistance to Spain, which insured her independence, Portugal had welded herself firmly into a united nation with cause for pride, and she had established a knightly Order of Christ, of which Prince Henry the Navigator was the Grand Master. Her outlet to the world was entirely on the sea, and religion, commerce and adventure were all enlisted to make her a pioneer country.

The Wonderful Discoveries of the Daring Seamen of Old Times

Thus the Portuguese became seafaring discoverers—far more so than the Spaniards. Columbus and Amerigo were Italians, and Magellan was a Portuguese, though they served Spain. The Spanish heroes were conquerors ashore in America; they were not voyagers into the unknown. It was the Portuguese who colonized the Azores and Madeira; found St. Helena and Ascension in the wide Atlantic; took possession of Brazil; touched at the lonely island of Tristan da Cunha; explored the west coast of Africa to Guinea, to the Congo, to Angola; doubled the Cape of Good Hope with Bartholomew Diaz in command; established settlements on the East African coast; reached India under Vasco da Gama, and made Goa the centre of their influence in the East; gained the trade of the Persian Gulf; discovered Madagascar and Mauritius; communicated with Abyssinia from the Red Sea; touched at Malacca and established themselves at Timor in the Eastern Archipelago; came into touch with Siam and China, and arrived in Japan.

All this, of course, was not done in the time of Henry the Navigator, but his were the foresight and energy and enthusiasm that started his country on the way to being a world power, till she almost rivaled Spain as a nation finding wealth beyond the seas.

At first it seemed likely that Spain and Portugal might fight over their discoveries. When Columbus returned from his first voyage, the pope issued a bull, or decree, by which he gave to Spain all lands discovered west of a line drawn 100 leagues west of the Azores. Portugal, however, was not satisfied with this, and the next year—in 1494—a treaty was made between the two countries. By this treaty it was agreed that a line running from the Arctic to the Antarctic, and 370 leagues west of the Cape Verde

PEOPLE WE MEET IN PORTUGAL

A poor peasant.

Peasant girl and two friends.

Going to market.

A mother.

A boatman at Coimbra.

A peasant girl.

The water-carriers.

Old fisherwoman.

Village children.

Islands, should be drawn on the map, and that all new land discovered west of that line should belong to Spain, and all land east of it to Portugal. The line made by the treaty is the line of which we usually think when we speak of the Papal Line of Demarcation, or the boundary dividing the territories which the pope believed he had the right to bestow on Spain and Portugal. As we know, neither France nor England paid any attention to this line, and though Spain sometimes claimed that Brazil was on her side, Portugal would not give up her settlements there.

The fall of Portugal was swifter than her rise. In 1520 she was at the height of her expansion. In 1580 she was annexed to Spain and was kept in the house of bondage for sixty years, an unwilling partner in the wars which broke down the might of Spain itself.

How came that fall about? Like Spain, Portugal crumbled from within. She became narrow and intolerant in religion and in business. She tried to make all her people of one religion, and so destroyed the freedom of the mind. She drove out the Jews, who had been the mainstays of her trade. Her population was too small to provide manhood for her enterprises far away, and she recruited it by starting a great slave trade, which partly Africanized some of her southern provinces. She had wealth, but had become weakened in manhood and in the love of freedom that trebles the power of manhood. So, when, eight years before he sent his Armada to conquer England, Philip II turned his eyes to Portugal, he swallowed her at a single gulp. Philip pretended that Portugal was still independent, but that he was her king; but every enemy of the Spanish Empire had now become an enemy of Portugal on all the ocean highways of the world.

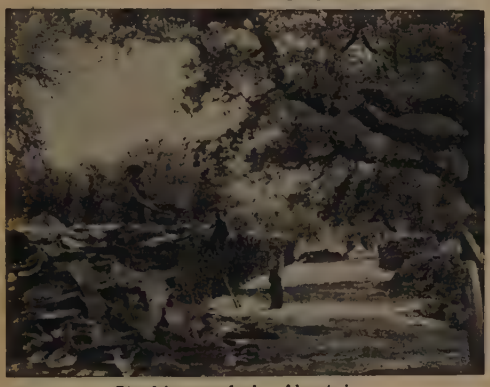
When, after sixty years of captivity, the weakening power of Spain gave Portugal a hope of regaining her freedom, she rebelled, and under the Duke of Braganza became an independent kingdom again. In 1703, by the Methuen, or "Port Wine," Treaty, England and Portugal became closely allied commercially, and have remained so ever since. England had formerly imported claret from France; she now extended low tariff duties to Portugal on the heavier Port (from Oporto) and was given the same privileges on her own manufactured goods. The alliance has been sustained. During the Peninsular War, Portuguese troops were brigaded with Wellington's men long after Portugal was cleared of the French invaders.

A public garden in Lisbon.

During the advance of the French into Portugal in 1807 the royal family of Braganza, as the only means of avoiding capture, retired to the great colony Brazil and remained there until the end of the war, and indeed for some time afterward, while an Englishman administered the law of the rescued nation. When the Portuguese king returned to reign, his son remained in Brazil, and under his sovereignty that country finally asserted its independence. The flight of the royal family to Brazil really caused the separation of Brazil and Portugal. For the first time jealousy entered into their relations, and then Brazil chose to become independent.

WORKERS ON THE LAND IN PORTUGAL

Bringing in the harvest in the Province of Alemtejo.



Stacking cork in Alemtejo.

Farm workers storing corn.

Workers in an olive grove in Beira.

The story of Portuguese politics since has been a story of political intrigue, ending in the flight of the last king, Manoel II, after the murder of his father and elder brother, and the proclamation, in 1910, of a republic. This has had no stability, but has been in a constant state of change, government succeeding government generally through the influence either of the army or the navy. In the World War, however, Portugal was one of the first nations to declare herself on the side of the Allies, and she sent a small force into the field in France.

In Africa also she had to be prepared to protect her large colonies, Angola on the west coast and Mozambique on the east.

THE WIDE OVERSEAS POSSESSIONS OF A SMALL EUROPEAN NATION

With continental Portugal the Azores and Madeira are included in an area of 35,500 square miles. The colonies have still an area of over 798,000 square miles, chiefly in West Africa and East Africa, two solid blocks of territory with over six million inhabitants between them. The other overseas possessions include three Indian coast settlements, Goa, Din and Daman. Goa, on the Malabar coast, has, from the days of the earliest discoverers, been the centre of Portuguese activity in the East, but its importance has greatly declined. In the eastern part of the East Indian island of Timor a population of over 450,000 remains under Portuguese administration, the rest being under the Dutch. Macao is a small Chinese settlement near Canton, dating from the sixteenth century. It is chiefly busy with the tea trade. The Cape Verde Islands in the Atlantic have a population of 150,000. Coffee is the chief production. Portuguese Guinea is entirely inclosed by French Senegambia. The islands of S. Thomé and Principe in the Gulf of Guinea have an extraordinarily rich soil, and are famous for their growth of cocoa.

THE MOUNTAINS AND RIVERS OF SPAIN THAT RUN INTO PORTUGAL

As we have already said, throughout its whole length Portugal is the continuation of the features of Spain to the westward, the Spanish mountain ranges and rivers being merely prolonged. Portugal has only one considerable river of her own, the Mondego. The Minho is a frontier stream of the north; the Guadiana, also, to a considerable extent, in the southwest; but the Douro and the Tagus cross the whole country. They are now, however, navigable far inland. Oporto, three miles from the mouth of the Douro, is reached only by ships of light draft, though it is named as a port. The port beyond the bar is Leixoes. Oporto is the centre of the wine trade, which is Portugal's largest business. Lisbon, the capital, on the estuary of the Tagus, has half a million people. It is much more open than Oporto as a port. Both Lisbon and Oporto are finely situated, and both are great manufacturing centres for clothing fabrics for use in Portugal and her colonies. There are no other large cities. Setubal, in the south, famed for its salt, has about 37,000 people; Braga, north of Oporto, has 21,000; Coimbra, the university town, has 20,000; and Funchal, in Madeira, has about the same.

Portugal is essentially an agricultural country. Though it has mineral wealth, its minerals are little worked except copper, partly through the absence of coal. The climate is healthy, except in the marshy parts of the low-lying southern coast, where malaria is prevalent. There is an abundance of rain, especially in the centre and the north, and one effect is a profuse growth of flowers.

THE IMPORTANCE OF AGRICULTURE IN THE LIFE OF THE PORTUGUESE

The vine and the olive flourish on the hillsides. Maize is grown in the north. There the breeding of oxen and sheep is the chief agricultural interest. Wheat is grown in the central regions. Fruits are abundant—oranges, lemons, figs, grapes, olives, almonds and tomatoes. The fisheries are important, particularly the sardine fishery centring in Setubal. The exports are wine, cork, fruits, potatoes, onions, cattle, wool, olive oil, salt, copper and sardines.

A feature of Portuguese life which has had a bearing on the nation's success and failures is the strong tendency to racial mixtures in her population. The purity of the race has never been preserved, and this has led to large numbers of people of mixed blood regarding themselves in her colonies as good Portuguese, with pride and contentment. But the same tendency in the homeland has caused a lessening of the quality of the men who once made Portugal a great colonizing power.

THE NEXT STORY OF ALL COUNTRIES IS ON PAGE 5291.

The Castle of Pena, on a hilltop at Cintra.

West front, Lisbon Cathedral.

Rua Augusta, Lisbon.

The Praça Do Commercio Arch.

The bridge across the river Lima at Ponte de Lima.

MIRACLES WROUGHT IN STONE

The unfinished chapel of the Dominican monastery at Batalha.

The Roman aqueduct at Evora.

Old walled town of Braganza.

The river Douro winds its way past the terraced hills.

MOORISH AND CHRISTIAN ARCHITECTURE

The great monastery at Mafra, 800 feet long and 700 feet wide.

Ermida de Sao Braz at Evora.

Church of the Good Jesus, Braga.

Oporto, the second city in Portugal, seen from across the river Douro.

THE FROG THAT HELPED THE PRINCESS

The frog dives down into the water and rescues the Princess's ball.

The Princess carried the frog to bed and found two little goblins on the pillow.

THE PRINCESS'S GOLDEN BALL

THE STORY OF THE FROG THAT BECAME A PRINCE

ONE fine morning a young princess went into a wood, and sat down by the side of a cool spring of water. She had a golden ball in her hand, and she amused herself with tossing it into the air and catching it again as it fell.

After a time she threw it up so high that when she stretched out her hand to catch it the ball bounded away and rolled along upon the ground, till at last it fell into the spring. The princess looked into the spring after her ball, but it was very deep, so deep that she could not see the bottom of it.

Then she began to lament her loss, and said: "Alas! if I could only get my ball again, I would give all my fine clothes and jewels, and everything that I have in the world."

While she was speaking a frog put its head out of the water and said: "Princess, why do you weep so bitterly?"

"Alas!" she said, "what can you do for me, you nasty frog? My golden ball has fallen into the spring."

The frog said: "I do not want your pearls and jewels and fine clothes; but if you will love me and let me live with you, and eat from your little golden plate, I will bring you your ball again."

"What nonsense this silly frog is talking!" thought the princess. "He can never get out of the well. However, he may be able to get my ball for me, and therefore I will promise him what he asks." So she said to the frog: "Well, if you will bring me my ball, I promise to do all you ask."

Then the frog put his head down, and dived deep under the water; and after a little while he came up again with the ball in his mouth, and threw it on the ground, where it rolled invitingly.

As soon as the young princess saw her ball, she ran to pick it up, and was so overjoyed to have it in her hand again that she hardly thanked the frog, but ran home with it as fast as she could.

The frog called after her: "Stay, princess, and take me with you as you promised."

But she did not stop to hear a word.

The next day, just as the princess had sat down to dinner, she heard a strange noise, tap-tap, as if somebody were coming up the marble staircase; and very soon afterward something knocked gently at the door, and said:

"Open the door, my princess dear,
Open the door to thy true love here!
And mind the words that we two have said
By the fountain cool in the greenwood shade."

Then the princess ran to the door and opened it, and there she saw the frog. She was terribly frightened, and, shutting the door as fast as she could, came back to her seat. The king, her father, asked her what had frightened her.

"There is a nasty frog," said she, "at the door, who lifted my ball out of the spring this morning. I promised

him that he should live with me here, thinking that he could never get out of the spring; but there he is at the door and wants to come in!"

While she was speaking the frog knocked again at the door.

The king said to the young princess: "As you have made a promise, you must keep it; so go and let him in."

She did so, and the frog hopped into the room and came up close to the table.

"Pray, lift me upon a chair," said he to the princess, "and let me sit next to you."

As soon as she had done this, the frog said: "Put your plate closer to me, that I may eat out of it."

This she did, and when he had eaten as much as he could, he said: "Now I am tired. Carry me upstairs and put me on your little bed."

The princess took him up in her hand and carried him to bed. On the pillow were two little goblins, who vanished as they appeared, and the princess put the frog upon the pillow of her little bed, where he slept all night long. As soon as it was light he jumped up, hopped downstairs, and went out of the house.

"Now," thought the princess, "he is gone, and I shall be troubled with him no more."

But she was mistaken, for when night came again, she heard the same tapping at the door; and when she opened it, the frog came in and slept upon her pillow as before till the morning broke; and the third night he did the same.

But when the princess awoke on the following morning she was astonished to see, instead of the frog, a handsome prince standing at the head of her bed and gazing on her with the most beautiful eyes that ever were seen.

He told her that he had been enchanted by a wicked fairy, who had changed him into a frog, in which form he was to remain till some princess should take him out of the spring and let him sleep upon her bed for three nights.

"You," said the prince, "have broken this cruel charm, and now I have nothing to wish for but that you should go with me into my father's kingdom, where I will marry you and love you as long as you live."

The young princess, you may be sure, was not long in giving her consent; and as they spoke a splendid carriage drove up, with eight beautiful horses decked with plumes of feathers and golden harness, and behind rode the prince's servant, his faithful Henry, who had bewailed the misfortune of his dear master so long and bitterly that his heart had well-nigh burst.

Then all set out, full of joy, for the prince's kingdom, where they arrived safely, and lived happily for many years after.

GOG AND MAGOG

THE TWO GIANT BROTHERS WHO WATCH OVER LONDON

IN the gallery beneath the western window of the Guildhall of London stand two great giants whose names are Gog and Magog.

Gog is clothed in a rude fashion, and he carries a morning star, which is a great iron ball covered with spikes and fastened by a chain to a long pole. Magog, on the other hand, is arrayed like an ancient Roman soldier, and he carries a halbert, which is a kind of battle-ax with a spear at the top.

Gog and Magog are brothers, and the reason why they are dressed and armed in a different way is very curious.

When the ancient Britons came to England the country was peopled by a race of savage giants who lived in dark, damp caves and dressed in the skins of animals. They were very angry when the Britons settled on the banks of the Thames and began to build the city of London.

"What do these men want with houses?" said Gog. "Why don't they live in caves as we do? Let us kill them and destroy their new city."

"No," said Magog. "Let us make friends with them, and learn how to build and till and weave. I am sure it is more pleasant to live in a house and wear clothes than it is to live in a cave and wear skins."

But the other giants would not listen to Magog. They looked on the Britons as intruders and enemies to be driven away or killed. They attacked them and drove them into London, and then they resolved to capture the city the next morning and slay all the inhabitants.

But, on the advice of Magog, the Britons dug a wide deep trench outside London in the night, and fixed rows and rows of sharp stakes at the bottom of the trench, and covered it with light hurdles. In the morning they went out and fought the giants, and then they pretended to be defeated and ran back lightly across the hurdles. Their great clumsy enemies came lumbering after them, and the hurdles gave way, and down fell all the giants into the trench upon the rows and rows of sharp stakes.

Only Gog escaped, and Magog said to him: "Will you live with me in the Guildhall, or will you fight to the death?"

"I will fight to the death!" cried Gog; and whirling his morning star, he rushed upon his brother. But Magog was armed with a halbert which the Britons had made for his use, and with this he struck Gog down and vanquished him. The Britons lifted up the wounded giant and carried him to the Guildhall, and laid him on a soft feather bed and tended him until he was healed; and Gog was so touched by their kindness that he resolved to remain with Magog in the Guildhall and guard it from danger.

The Giant Gog at the Guildhall, London.

The Giant Magog at the Guildhall, London.

Now, every Christmas night, when the clock strikes twelve, and the Guildhall is dark and silent, Gog and Magog come out for dinner, and all the rest of the year they stand in the gallery beneath the western window of the Guildhall and watch over the welfare of the people of London.

Some day you may go and see them—two fierce-looking, gigantic, dark carved figures, one on each side of the window, so tall that you have to strain your neck to look up at them, and many people wonder how they came there.

The original figures were destroyed in the great fire of Charles II's reign, but the people of London felt that they could not do without the giants, which were replaced in 1708.

EARL'S DAUGHTER AND BEGGARMAN

HOW GUY OF WARWICK WENT OUT INTO THE WORLD AND CAME HOME AGAIN

IN the early days of Britain the favorite attendant of Rohand, the Earl of Warwick, was very ill. The doctors had given him all the valuable herbs they could think of, but still he wasted and pined away.

At last he murmured very faintly: "Felice! If Felice were brought to me, I might yet live."

The doctors, bending down, caught the words faintly and said one to the other: "Felice? Felix? There is no such herb."

And the poor boy answered: "No herb is Felice, but a flower—the fairest flower that grows."

The boy's name was Guy, and the name he murmured was the name of the great earl's beautiful daughter.

One day when he was better and was able to move about the garden, he saw Felice approaching. She had heard that Guy was dying of love for her, and she had had a strange dream in which Heaven declared that the life of this poor page was a precious one.

So she spoke kind, strong words to him: "Why kneel there weeping like a girl? Get up, and show if there is the making of a man in you! The swan mates not with the swallow, and I will never wed beneath me. Show yourself my peer. For I could love a brave and valiant knight before whose spear men bowed as to a king, nor would I ask his parentage; prouder to know that my children took their nobility from a self-made nobleman. But a weeping, lovesick page! No! Show me something that you do that I can love."

Her words filled the heart of the page with a strange and glorious strength. His eyes shone, his voice rang clear. He told the beautiful girl that love for her should make him the greatest knight in the world.

And Felice answered: "I will watch and wait."

Then Guy got speedily well of his sickness, and the great Earl of Warwick, rejoicing in his favorite's recovery, dubbed him knight and provided him with a proud horse royally caparisoned, with rich armor, with spear and sword and shield. Thus accoutred, the bright-faced boy rode away from Warwick to do great deeds and make a name for himself. He traveled into strange lands, crossing many stormy seas, and scarcely a day passed but he was in the midst of some fierce and terrible adventure, which almost passed one's powers to believe. As the years fled away his fame increased, till the whole world heard of the deeds of Sir Guy.

After many adventures, covered with glory, he returned to Warwick, and presenting himself before Felice, asked her if he had yet won her love.

But Felice answered in a strange voice. Yes, he had won her love; he had done great deeds; he was, in all men's eyes, the bravest knight in Christendom; yet would she not marry him. And this was her reason. Marriage would put an end to his glory. He was too young yet to turn away from joustings and tournaments; he must seek glory in his youth, and only when his arms began to weaken, take his ease in the idleness of a lady's love. Glory, glory! More and ever more glory!

So Guy rode away once more, and once again the earth rang with his deeds. He defended the weak; he punished tyrants; he overthrew the cruel. Then he returned again, and this time Felice yielded to him, and the most beautiful maiden in Britain was married to the most valiant knight in Christendom.

But now a strange thing happened.

They had been married, this happy pair, forty days. It seemed as if forever after life must be to them one long and beautiful summer festival of love and happiness. But it chanced that Sir Guy, sitting one sunset at a window in his tower, began to meditate upon his past life in foreign lands. He had killed many men; he had taken many kingdoms; he had laid waste many lands. Why? Why had he fought and killed and striven? Why? *For a woman's love!* The thought shocked him. All his life he had been seeking earthly glory for the sake of a woman's love. Not once, not once in all his crowded life, had he done a single deed purely for God.

He rose up, determined to serve his God. Felice clung to him with tears. She who had sent him forth on perilous quests now cried to him not to leave her. But Sir Guy would not listen. "Not yet

one single deed for God above!" was his lament. And he clad himself in a palmer's dress, and, with a gold ring of his wife's upon his hand, set out on a pilgrimage of penance to the Holy Land.

Once more did adventures, many and great, fall to Sir Guy, even in his pilgrim's dress; but he let no man know that he was the terrible Guy of Warwick, but rather let them think that the power of God was made manifest in a poor pilgrim. Afterward, humble in heart and at peace with God, still wearing his pilgrim's dress, he returned to Warwick.

He was so changed in appearance that no one knew him; and when he humbly presented himself at his own door, begging for alms, he was received by his own wife as no more than an ordinary pilgrim, and entertained by her unawares. Sir Guy was more amazed to find that the proud and beautiful Felice welcomed him with a sweet and gracious humility, that she insisted on bathing his feet herself, and waiting upon him as he sat at table. Then he learned that, because her own husband was a pilgrim in the Holy Land, this great lady, ever since the hour of his departure, had spent all her days in doing human kindnesses. How sweetly she spoke of Sir Guy; how tenderly she listened to the poor; how graciously she comforted the sad and sorrowful; how lovingly she gave herself to the pleasure of children at her gate!

Then thought Sir Guy: "She is serving God. Who am I to come between her and God? I will go away."

Yet so great was his love for her that he could not bear to go very far from her dwelling. So he betook himself to a hermit's cell near by, and there for many years, in fasting and prayer, devoted all his thoughts to the great God who had made the heavens and the earth, and delighted his eyes in beholding the pure and holy life of his Felice from afar off. At last, grown old and gray, and feeling that he was dying, he sent Felice's ring to the castle by a herdsman, bidding him give it to the Lady Felice herself.

In the old days, when men gave up their lives to some great cause and went out into the world doing noble deeds, they would vow before the sacred altar to be true and faithful. This famous picture, painted by John Pettie, R.A., shows a brave knight's vigil all night at the altar, taking a vow to live nobly and right.

"Where got you this token?" cried Felice, very white.

"From a poor beggarman that lives in yonder cell," answered the herdsman.

"A beggarman! Nay! From a kingly man!" cried Felice. "He who gave you this ring is Guy of Warwick, he and no other!"

Then swiftly she flew to the hermit's cell, and lovingly she took the dying pilgrim in her arms, and softly they wept together. Husband and wife were united at last. Close to each other they clung, and happy were their hearts in the higher love which consecrates all mortal affection. And, under the roof of a hermit's cell, the splendid soul of Guy of Warwick rose to his God.

THE NEXT STORIES ARE ON PAGE 5255.

FRENCH—A TEA-PARTY IN PARIS

First line, French; second line, English word; third line, as we say it in English.

Nos cousins demeurent à Paris.
Our cousins live at Paris.
Our cousins live in Paris.

Nous allons les visiter avec maman.
We go them to visit with Mamma.
We are going with Mamma to visit them.

Nous désirons les revoir.
We desire them to see again.
We want to see them again.

Le commissionnaire fait venir une voiture.
The commissionaire makes to come a carriage.
The commissionaire calls a carriage.

Jeannette dit: "Nos cousins, où demeurent-ils?"
Jenny says: "Our cousins, where live they?"
Jenny says: "Where do our cousins live?"

"Près d'ici," répond maman.
"Near of here," replies Mamma.
"Close by," replies Mamma.

Nous sommes bientôt arrivés.
We are soon arrived.
We are soon there.

Nos cousins et notre tante sont très heureux de nous voir.
Our cousins and our aunt are very happy of us to see.
Our cousins and our aunt are very glad to see us.

Nos cousins nous montrent tous leurs joujoux.
Our cousins us show all their toys.
Our cousins show us all their toys.

Ils ont un grand chien.
They have a large dog.
They have a big dog.

Bébé croit que c'est notre chien Prince.
Baby believes that this is our dog Prince.
Baby thinks it is our dog Prince.

Il crie: "Mon toutou!"
He cries: "My bow-wow!"
He cries: "My bow-wow!"

Jeannette dit: "Comment l'appelez-vous?"
Jenny says: "How him call you?"
Jenny says: "What is his name?"

Ils disent: "Son nom est Beau."
They say: "His name is Beautiful."
They say: "His name is Beau."

Jeannette tend son mouchoir.
Jenny extends her handkerchief.
Jenny holds out her handkerchief.

Beau saute en l'air et il renverse la table à thé.
Beau jumps in the air and he upsets the table of tea.
Beau jumps up and upsets the tea-table.

La lait est répandu sur la robe de maman.
The milk is spilled upon the robe of Mamma.
The milk is spilled on Mamma's dress.

Notre tante crie: "Quel dommage!"
Our aunt cries: "What damage!"
Our aunt cries: "What a pity!"

"J'en suis désolée!"
"I of it am sorry."
"I am so sorry!"

La bonne entre pour enlever les tasses cassées.
The maid enters for to take away the cups broken.
The maid comes in to take away the broken cups.

THE NEXT FRENCH STORY IS ON PAGE 5330.

HOW TO MAKE DISHES OF CLAY

IF you happen to be fortunate enough to live in a community where good clay is to be found, it will be an easy matter to secure enough to make as many dishes as you may care to use. In case there is no such clay at hand, you may buy some low-temperature clay from one of the local dealers or have it ordered for you from any school-supply house. The reason for ordering low-temperature clay is merely that it is found to stand the fire better than some of the other clays.

Should you find some clay soil in your locality, first secure several lumps and break them up into small pieces in order to remove the larger stones and any other foreign substances. Then put as much clay as you expect to use in a large tin can or pail, and after covering it with water, stir with a stick until you have a creamy mixture. Next, secure a fairly fine mesh screen or sieve and pour this mixture through it into another can or pail to remove stones and other substances which were not picked out in the beginning. This mixture is allowed to settle for a few hours. The clay will then have settled to the bottom of the container, so that the water is easily poured off. The clay should now be distributed on a board and left in the sun to get rid of enough of the moisture so that it will be plastic (putty-like) when you work or rub it in your hands.

Three dishes designed and made by children.

Whether you have prepared your clay in the manner explained above or have bought it as suggested, it is important that the clay be made plastic by working it with the hands for a number of minutes. It will be found more satisfactory to make full-sized pattern designs of the dishes which you are to make, by first folding and then cutting pieces of stiff paper, although drawings may be made instead if this method is preferred. In either case the pattern forms should be quite simple for the first dishes that are made. When the pattern or the drawing has been completed, it is usually found more satisfactory to transfer it to another piece of drawing-paper in order that it may be decorated and colored with crayons or water colors to match the color, or colors, of the desired dish. In working out the colors it will be necessary to limit these to red, yellow-red, black and the fired clay, for reasons which will be clear later. The clay dishes shown were designed and made by children.

After the designs have been completed and your clay has been worked until it resembles putty, you are ready to form the dishes to the shapes which you have planned. These dishes are made by using the clay in coils that are rolled between the hands and the table, which is protected by a piece of oilcloth or by a piece of heavy paper. It will be found easier to use a heavy paper or pasteboard of about the same size as the base of the desired dish form, as it will serve as a guide in the beginning. This is then easily covered with a piece of clay a little less than one-fourth of an inch in thickness. The building of the sides, or walls, upon the base is accomplished by the spiral arrangement of the clay coil, which is held in place at each

complete turn of the coil by being pressed tightly against the preceding coil, as shown. If the sides, or walls, should become unsteady because of too much moisture and the weight of the clay, the dish form should be set aside to become harder before the building is continued. In this case the last coil should be cut squarely off with a knife, and a thick mixture of clay and water (slip) should be applied with a cloth or a small brush.

When the dish has been entirely built, it is scraped and carefully trued, first with a knife and then with sandpaper. If the design is used, it may now be cut in (incised) either with a knife or with a nail before the clay hardens. Any parts to which color is applied should be brushed over with slip just before the color is added. Pigment colors for application to the clay may be produced by reducing rotten stones of various colors to powder with the aid of a hammer or any hard pounding tool. The colors are mixed with a small proportion of clay which will bind them to the body of the dish; or more attractive colors may be bought at the paint or drug store. The colors may be mixed with liquid glue and can be painted upon the moist clay in the form of a thick paste. If the surface of the clay is scratched with a pin or a piece of broken glass before painting the dish, this will improve the bonding quality. Red oxid of iron can be used for red, yellow ochre for yellow-red, and black oxid of copper for black.

Pressing the coils of clay.

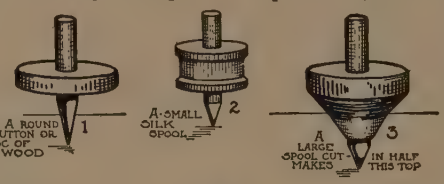
It is not necessary to have a kiln in order to fire dishes of this kind. Unless the dishes are fired, they will be porous, and therefore not so useful. Although open fires may be used, an iron kettle placed in an open fire of wood will prove to be a satisfactory means of firing these dishes. This is known as the Indian or open-fire method. The kettle prevents the burning wood from falling upon, and thus breaking, the dishes. The kettle can be covered to keep the dishes from being broken. Care should be taken that the heating and cooling are gradual. The dishes should be kept at a red heat for not much over an hour.

Your dish is now ready to cool, and you may see how closely it resembles your original design as to color and form. As you gain more experience in this art you may make beautiful vases and other forms of pottery.

You will be interested to know that the most primitive method of making pottery was by this hand method. Coils of clay were wound around, one on top of the other, and welded together by pressing, and sometimes by the use of water, by the Indians long, long ago. Their dishes were shaped and smoothed by hand. Later, vessels of circular form came to be made with the aid of the wheel-throwing method. By this method the lump of clay can be placed on a revolving horizontal disk and shaped by the hands of the potter, who keeps his hands moist by dipping them constantly into the thin mixture of clay and water known as slip. By means of the slip his hands are kept from sticking to the revolving lump of clay. After the vessel has been removed from the disk and has become partially dry, the form is often improved by means of turning.

TOPS WHICH ANY BOY CAN MAKE

THE making of tops is a fascinating pastime for most boys. In fact, where is there a boy of any age who does not like to spin a top? He likes the top both because it moves and because he can make it go. All of the tops shown in theaccompanying drawings may be made by very young boys with only a few materials such as are usually found about the house.



Picture 1 is of a top that may be easily made with a large round button or with a disk of wood. The button or the round disk is made into the top shown by fitting a peg of about ¼ inch diameter, which has been pointed on one end, into a centrally bored hole of the same diameter. The exact location of the button or disk can be determined by trying to spin the top and then moving the parts until the best balance is had. Experiment will find this.

Pictures 2 and 3 also show how tops may be made of spools of various sizes, shapes and kinds. The spools may be used just as they are found, as in picture 2, or whittled and shaped, as in picture 3; the more symmetrical the better.

Picture 4 shows a musical disk top, which may be made large or small. It is easily cut from either cardboard or thin wood, as shown in the three suggestions just below the top in this picture.

If desired, each top may be made more attractive in appearance if bright-colored paints are used. These colors can be quite varied in selection on each top, as they will be found to blend with each other when the top is being spun.

A little care and thought will enable the top-maker to plan and cut out a number of disks which will fit one top. If designs are cut out from, or painted upon, the different disks and then those disks are placed one upon the other, the result, as the top whirls, will be surprising. Colored-paper strips may be used instead of paper or cardboard disks.

HOW TO MAKE A COLLECTION OF SHELLS

IT would be well to begin with the land shells. Some are as large as horse-chestnuts, others so small they are like pinheads. They differ, too, in color and in shape. The surface may be smooth, or furrowed with lines, or rough, with short, stiff hairs. The opening of the shell, out of which the feeding snail thrusts its head, is called the lip, and is sometimes curiously bent and wrinkled; on the inside there often appear little ivory-like knobs called teeth.

WHERE TO FIND WATER SHELLS

The best place to look for shells is the seashore, and on any beach or coast we shall be sure to find something of interest and value for our museum. Some will, of course, be broken, through having been thrown upon the stones by the waves; but many may be found embedded in the tangled seaweed. As there are very many tiny shells, a pocket lens, which will prove of great assistance, should be taken on our shell-hunting expeditions. We may also obtain many interesting specimens of shells from the fishermen on our coasts.

For fresh-water shells, the river, the stream, the pond and the ditch should be searched, and a warm, sunny day with little wind is the best time. Some kind of dredge is necessary, and a handy one may be made of perforated zinc in a shape similar to that of a coal-scoop, only smaller. If the water is clear, we may be able to see shells lying in shallow water; but if we are unable to see, we should use our dredge, drawing it first through the surface water and afterward through the mud or gravel at the bottom.

HOW TO LOOK FOR LAND SHELLS

If we cannot go to the seashore or even to a river or stream, we can look for land shells in our gardens; and if it be only the shell of the garden snail that is available, it is astonishing what an interesting collection can be made of different varieties. The evening of a rainy day is the best time to search for land shells, and although they may be found all the year round, the months from April to December are the best. The hedgerow, the mossy bank, among the roots of trees, under stones and logs of wood, under leaves and heaps of rubbish —these are some of the places in which to look for land shells. The creatures that live in the shells come out to feed at dusk, so that the best time to begin our search is in the evening. It is easier to spot the shells at this hour of the day because they move as their inhabitants seek food.

TO CLEAN THE SHELLS

If the shell is inhabited, we must first of all remove its occupant and then soak the shell in hot water. This will dissolve any salt that may adhere to sea-shells, and will loosen the dust on all shells. Having thus thoroughly cleansed our specimens and dried them, we shall find it a good plan to paint them over with a thin solution of gum arabic, to give them the lustre and glistening appearance that they have in water. Ordinary white of egg may also be used for the purpose.

HOW TO ARRANGE THE SHELLS

Little white cardboard boxes such as jewelers use will be suitable for storing our shells. Or a few candy boxes, especially those made with two or three layers, would be splendid for the purpose. If we feel ambitious to start a larger collection of shells, we may use a shallow wooden packing box divided into compartments. The shells look very nice arranged in their boxes with cotton-batting, which may be purchased for a few cents. We should use white cotton for the dark shells and blue or red cotton for light shells. Some collectors paste their shells on colored cards, but it is better not to paste them. Each box should be labeled with the name of the specimen and the place and date of finding. The labels may be pieces of ordinary stamp-edging. Of course for sea-shells, such as those of oysters, scallops and mussels, larger cases are required. A tiny bit of paper can be pasted on the shell itself with a number on it corresponding to the number on the box.

THE SHELLS TO SEARCH FOR

The first of the land shells is that of the snail, there being forty different kinds, and in many cases the shells of each kind vary greatly. Of the ordinary snails, the most easily found are the common snail, with olive shell and dark brown bands; the girdled snail, with its yellowish green shell, not to be confounded with the rarer and prettier green snail; the garden snail, which varies greatly in its colors; the shrub snail, resembling the garden snail; the gored snail, found in chalk and lime districts; and the black-tipped snail that is so much like the gored snail as to be often mistaken for it; the pale green heath snail; and the grayish bristly snail, which may be found on dry heaths.

MANY KINDS OF SNAILS

In addition to these common snails we should look for the transparent glossy snail, found under decaying leaves and in damp moss. The shell is very thin and glossy and is a transparent green. Then there is the smooth yellowish shell of the cellar snail, found in cellars and drains and among the long grass of fields; the flat, yellow and polished shell of the garlic snail, so called from the odor of garlic which it has when alive; the dull snail, with the small yellowish brown-colored shell; the delicate snail, another kind with a tiny shell, smooth and very glossy; the amber-colored shell of the rayed snail, small and wrinkled; the little excavated snail, generally found under fallen trees; the small shining snail, which does so much damage in hothouses.

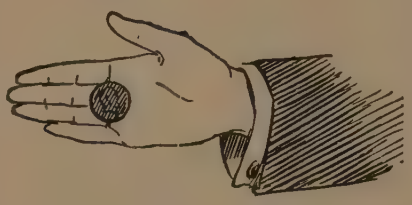
Other shells we shall find in large numbers on land and in the ponds and rivers and ditches. It is an interesting occupation to identify these by grouping them after the style of the specimens in the local museum, or, if there is not one near, by searching through the pictures in shell books that can without doubt be obtained from the local library. Sea-shells gathered on the holidays may also be identified and grouped in the same way.

THE MYSTERIOUS DISAPPEARING PENNY

THIS is a penny through which a tiny hole, not larger than the thickness of a pin, has been bored, close to the edge.

Having obtained a penny so treated, the young conjurer must next procure a long hair. A piece of fine pink- or flesh-colored silk thread will answer the same purpose; in fact, it is in some respects more manageable. A few inches of the hair, or silk, as the case may be, are to be passed through the hole in the coin, and the ends tied together so as to form a loop. This loop must be of such a size that, when it is passed over the forefinger as far as it will go the coin will hang down over the lowest joint of the middle finger, as shown in the picture.

The coin being thus made ready for use, the young wizard must practice making it disappear and reappear; or, in other words, transferring it to the back of the hand, where it will naturally be invisible, and bringing it again to the front. The disappearance may be effected in either of two ways. The first is by means of a quick backward turn of the wrist, the coin swinging over to the rear by its own weight. The second is to tip it back with the thumb. Both methods should be well practiced, and it will be found a good plan to practice them before a looking-glass, as we can then judge of the exact effect produced. The tilting movement should, in either case, be covered by a slight sweep of the arm backward to cover the disappearance of the coin, forward for its reappearance.



How the magic penny should hang.

The effect will be magical if professedly executed with a coin just borrowed, as to which there can be no idea of preparation. But a clever conjurer is not content with merely causing the disappearance of anything. To make the trick complete, he makes the vanished object appear somewhere else. As a simple example of this, we will suppose that having the prepared coin, suspended by its loop, concealed in the right hand, the performer borrows a penny, which he takes in the left hand, letting it lie on the joints of the second and third fingers. Making a half-turn of the body from left to right, he apparently places it in the right hand, in reality retaining it in the left by slightly bending the two fingers above named, and showing in the right hand the trick coin, as it that were the one just loaned to him. The other hand is drawn away, palm downward, as if empty.

Showing the trick coin as above, lying flat on the hand, the performer asks someone to spread a handkerchief over it. "Go!" he says. He lifts the handkerchief delicately by the centre, but the coin has disappeared, having been tipped over by the thumb to the back. Again he has the palm covered and brings the coin, by tilting the hand as he removes the handkerchief, mysteriously back again. At this point there will probably be a cry of "Up his sleeve," the sleeve having from time immemorial had the credit of half a conjurer's uncanny deeds. To disprove the false accusation, he pulls up the sleeve, and with the arm bare "vanishes" the coin once more, but at the moment of saying "Go!" thrusts forward the closed fist of the left hand and opens it with a jerk, showing the borrowed coin therein.

He may now pick up the borrowed coin from the left hand, again showing instead in the right the trick coin, which he has meanwhile swung once more to the front. He then says: "I shall now order the penny to pass into that matchbox," where he has concealed a similar coin beforehand. The right hand is again shown empty, and while the astonished company turn to see whether the coin has really passed to the place indicated, the real borrowed penny is quietly dropped into one of the pockets of the conjurer. The owner of this penny can pass it around for examination.

THE PROBLEM OF THE HORSESHOE CARD

SOME boys and girls were sitting at a table enjoying themselves on a wet afternoon by cutting out paper letters and figures with scissors. After a time they became tired of this game, and to amuse them still further and keep them quiet, their uncle said he had a puzzle to give them, and would offer a prize to any of the children who could solve it correctly.

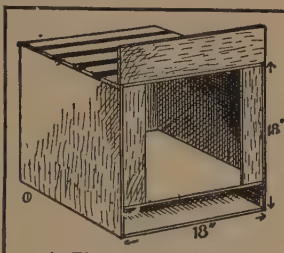
"What is it, uncle?" cried all the boys and girls. "We shall certainly solve the puzzle."

Then the uncle said he was going to cut out a piece of paper, and the puzzle was to give this paper just two cuts with the scissors, and by doing that to cut it into seven pieces. At once the boys and girls asked if they might fold the paper; but the gentleman said no folding was allowed—the paper must be kept flat, and two straight cuts given. The piece of paper he gave them was shaped something like a horseshoe, as seen in the picture here. It was 3 inches high and 2 inches across. The boys and girls puzzled themselves for a long time; and the uncle fulfilled his object of amusing them, but none of the children could do the task. At last they grew tired of trying, and asked their uncle to show them how it was done. Taking the card in one hand and the scissors in the other, he gave one cut; then, putting the pieces side by side, he gave another cut, and there were the seven pieces. How was the card cut? The solution will be found on page 5339.

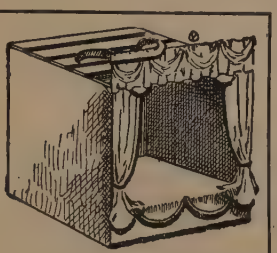
The shape of the piece of paper.

BUILDING A MODEL STAGE

TO most of us the theatre is a perfect fairy-land, peopled by all sorts of wonderful beings in all sorts of marvelously colored dresses. They are like people who have walked out of dreamland for a little while to amuse us poor folk on earth. There is no reason why we should not all have a theatre of our own that we can play with at home. All we need do is to make a toy stage with toy scenery and toy actors and actresses. The more brilliant among us may even write short plays, and entertain our friends by giving performances upon the stage that we have made with our own hands. We shall now proceed to show how to make our stage and little men and women. (See picture 1.)



1. The stage undraped.

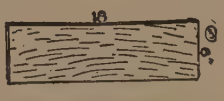

2. How to drape the stage.

The frame of our little stage will be made from a rough box. The front opening may be of any convenient size, depending on the size of the box at our disposal. It should be not less than 18 inches wide, however, and 18 inches is a good height. The stage is raised from the ground 2 inches. The roof is made of strips of wood stretching from side to side, with a space of 1 inch between the strips as in picture 4. It is through the openings between the wooden strips that we let the scenery and also our actors and actresses descend upon the stage when the right time comes.

Now we nail to the top of our stage a front board, as seen in picture 3. It may be 4 to 6 inches high, and it must go from side to side. Its purpose is to hide the movements of our hands as we manipulate, or work, the scenery and the figures.

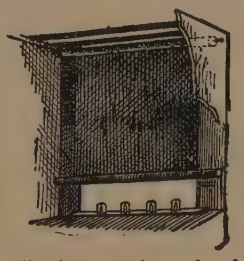
Our next task is to make the footlights, which are essential to any stage. The footlights must not be seen by the audience sitting in front of the stage, so they must throw out no light toward the front. Their light should be thrown entirely upon the stage, the scenery and the actors and actresses.

The simplest footlights are candles. (See picture 6.) They must not be very long, and as we want them to last some time we should select short pieces of good, thick candles. If we get a few carriage candles and cut them into sections about 2 inches long, they will do very well. We make our candle reflectors from pieces of tin, about 4 inches square, bending each piece into a curved shape, as in picture 8. To fasten the pieces of tin to the floor in the front of the stage we can make a few holes in the tin by driving a nail through them, and then tie the tin pieces to tacks or nails driven into the wood. We place a candle behind each tin reflector. We can stick the candles on to the wood by allowing a few drops of candle-grease to drip from a lighted candle, and then put the candle in place while the drops of wax are still hot and liquid. If we wish to make them still more secure, we can put in three wire nails about 1 inch long with the points sticking up a bit. The candles will fit between the nails seen in picture 8. The reflectors and the candles behind them may be placed 4 inches apart from each other. The sides of the reflectors which are next to the audience may be painted the same color as the stage hangings that we are now about to consider, or they may be covered with colored paper so as not to allow the tin to be seen by the audience.



3. Shape of the front board.

4. The roof of our model stage.


5. The drop curtain partly raised.

6. Row of footlights.

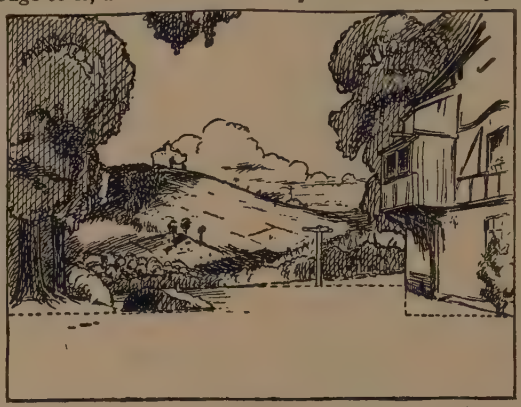
7. Curtain roller. 8. Tin reflector.

To drape our stage in front, as seen in picture 2, we may use any cheap fabric that gives a good effect, and we can usually find about the house some remnant that will serve our purpose. If we have to purchase the cloth, a yard of sateen, or other similar cloth, will provide all we need. Any color, such as blue, green, crimson or old gold, will do. We attach the hangings with tacks, taking care to let the top hanging fall down below the roof for 1 or 2 inches, and to make the sides full, so that there will be no opening between the sides of the stage and the sides of the drapery.

A drop curtain is not absolutely necessary, but every proper stage has one; so if we wish to be quite up to date, we shall make one for our stage. To make it we require a piece of cloth, the color of which may be the same as the cloth used for the drapery that we have already put

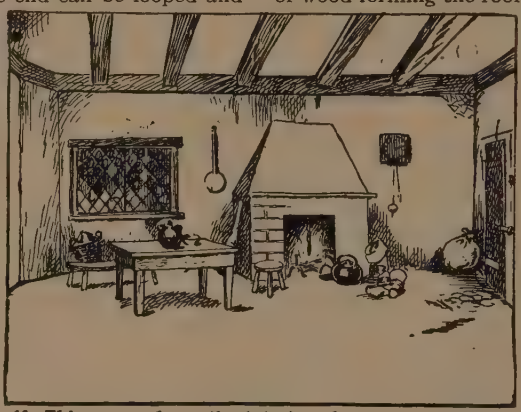
up. The size of this curtain will be 3 inches less than the size of the stage from side to side, and in the other direction it will be the same size as the height of the stage from the floor to the top.

To hang this curtain, the best method is to have two thin wooden rollers ½ inch shorter than the exact width of the stage inside. We fix the top of the drop curtain to one of the rollers by tacking the edge to it, and we attach the bottom of the curtain to the other roller in the same way. Now we make two holes in the side of the box just opposite where the centre of the upper roller is to be, and we drive two wire nails through these holes into the centre of the top roller at each end, as shown in picture 7 on page 5203. The nails should be thin so that they may easily turn round in the holes in the stage wall. We next fix a cord to the end of the top roller and wind it round and round like a window-blind cord, taking care to keep it as far away from the stage wall as possible. The curtain from the inside of the stage will look like picture 5, which helps to explain how to make and fix it. By pulling the end of the cord the curtain rises, and by unfastening the end of the cord the curtain falls. The free end can be looped and put over a tack driven into the side of the stage at the back, thus keeping the curtain up when it is necessary to do so.



9. A typical piece of woodland scenery for the stage.

Now we shall make a back scene, or more than one if we wish. The easiest way is to have a sheet of cardboard and to draw and paint on it a picture, making the colors strong, as it is to be viewed from a distance and under artificial light. This cardboard scene should be the size of the back of the stage. We may have a different scene on each side of the cardboard, so that by reversing it we can change the scene. It is possible to make back scenes on hanging cloth, or canvas hung on rollers just as the drop curtain was hung. This way is very much better, but it involves a little more trouble to give it the proper effect.



10. This scene shows the interior of a country cottage.

We should make a variety of side scenery, such as trees, pieces of landscape, parts of houses, and many other ornamental things and there is plenty of room and scope in making these for the exercise of both artistic skill and of ingenuity. These side scenes should be drawn and painted on cardboard just a little taller than the stage, and they must be put into position through the cross-pieces at the top of the stage, where they rest without moving until we wish to change the scene by withdrawing them. These side scenes, after having been drawn and painted on cardboard, should be cut out so that our audience can see beyond them. If they are made of good, thick cardboard, they may be stiff enough, but if of thin cardboard it may be necessary to glue thin slips of wood or stiff cardboard to the back, so that they can be made comparatively rigid. Pictures 9 and 10 on this page show pieces of typical scenery which may be copied, making them of a size suitable for our stage. Set pieces are also desirable.

We have now only our actors and actresses to make. We can draw them on cardboard, but an effective and perhaps a lazy way is to take scrap pictures, stiffening them by pasting them on cardboard if necessary. Then we hang them on wires, which must be long enough to reach from the roof. Flower wire will do, or the wires from soda-water bottles. The wires can be bent round at the top end so that they can hang over the strip of wood forming the roof. We can make actors and actresses from clothes-pins, as shown on page 1030.

We are now ready to give our theatrical performance. We put our scenery in position and hang our figures on the wooden strips over the stage at the far sides, where, by manipulating the top ends of the wires, we can make them walk on to the stage as we require their presence. The words of the play can be recited by the player, and he must take care to change the tones of his voice to suit the style of character he is trying to imitate. It is essential that, before making a public performance, we should have several rehearsals, so that the play will be sure to proceed without a hitch of any kind. We should always remember the old saying that when a thing is worth doing it is worth doing well.

We can make up our own plays from stories we have read or from plots drawn from our own imaginations. This is more fun than using a ready-made play.

WHO ARE THESE PEOPLE?

A CHARACTER PUZZLE GAME FOR BOYS AND GIRLS

IN the following game the character of some persons mentioned in The Book of Knowledge is described. Someone reads the description aloud, and the boy or girl who gives the greatest number of correct names wins the game. It is best to write the names on a slip of paper, so that everyone who is playing has an equal chance. The solutions will be found on page 5336.

THE MAN WHO PREACHED HAPPINESS

1. There was once a handsome boy who loved fun and amusement. He thought of little else except how he and his companions could enjoy themselves. Yet he was generous, and often gave gifts to others. Animals knew he was fond of them, for his horse showed pleasure at his appearance, and birds came at his call to perch on his shoulders. As he grew older, he had more serious thoughts of the world about him, and puzzled over his own existence till he came to realize that love—love to mankind, to the birds, and the beasts, and the flowers, and, above all, to the good God and Father of all—was the thing of supreme importance. So he refused to dress in costly garments. He gave away all he had, and went about speaking kind words and doing good actions, trying to teach people the real secret of happiness.

A RULER OF ENGLAND

2. As we look at the portrait and think of this man we can understand how people ran to do his bidding, for he said what he thought right, and to him speech meant action. The man knew his own mind and his own power. He possessed no polished manners or courtly graces, but he had a sturdy self-reliance and strong will-power that was easily stirred to right an injustice or to defend his home, his country or his religion. Yet, like other men of strong character, he showed a tender heart to the weak and young, made a companion of his little granddaughter, and was very good to his feeble old mother. Some people say he was cruel, forgetting that leniency is sometimes great unkindness, and that a surgeon often has to inflict pain in order to cure.

THE MISER WHO HATED A GOOD MAN

3. We picture before us a repulsive man with black hair, ugly face, and claw-like hands. He grabs all the money he can and hoards it up. His heart is full of envy and spite against those who are generous. He once loved his wife; but now no one, not even his daughter, really loves him, because, though he has the power to do good that money gives, his mind is getting narrower and his soul is becoming dwarfed. He lends money at high interest, which he extorts to the very last farthing. Some people have been unkind to him, and have despised him for his nationality and race; but, instead of pitying and forgiving them, he becomes more self-centred, and harbors revenge. He tries to outwit others by cunning and lying, hardens his heart, refuses mercy, and plots against the life of another. But when truth and goodness are too wise and too strong for him, he shows himself an abject miser, and says he would rather die than give up his worldly wealth.

THE MAID WHO LED AN ARMY

4. There was once a maid who lived in the meadows tending sheep, whose eyes rested on the beauty of the blue sky and soft, snowy clouds, and whose ears listened to the song of the lark and the murmur of the brook. Her thoughts were beautiful, too, and pure as an innocent child's. She saw lovely visions of good and glorious beings who talked to her and helped her to do right. Her country had been conquered by the foreigner, and she mourned the fate of her dear native land. One day when she was musing in the fields it seemed to her an angel called to her to arise and save her country. Now, she was only a simple, ignorant maid, yet from that moment so strong a determination to help her country and secure its freedom filled her whole mind that she banished all thought of herself. And she was steadfast to her resolve so that battlefield, hardship, insult, suffering and imprisonment were powerless to break her spirit, until her enemies burned her at the stake.

THE GIRL WHO NURSED HER DOLLS

5. A little girl used to be very fond of her dolls, and pretend that they were ill and wanted nursing. She loved animals, too, and liked nothing better than tending sick and feeble creatures. As a child, she cared for her dolls and pets; as a woman, she spent her energies in nursing. Brave and merciful, she went hundreds of miles away from home to care for the wounded on the battlefield. She found things in a terrible state. Soldiers who had been badly injured by shot and shell were lying on the hard, cold ground. The attention that they received was of the roughest. They were dying in scores for the want of proper nursing and nourishment. With an energy that was simply wonderful, she set herself to alter it. She succeeded in her purpose, and through her great efforts she has robbed modern warfare of many of its terrors.

THE SHEPHERD BOY OF THE EAST

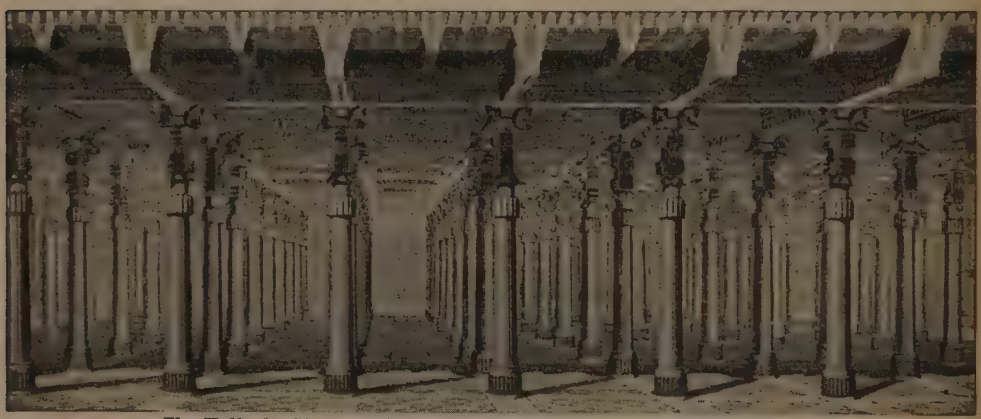
6. There lived in the East a shepherd boy who made sweet music and wrote lovely poetry. His mind was filled with great ideas about the goodness of God and the beauty of nature. At times he was happy and glad to be alive; but sometimes he grew depressed and melancholy, and prayed God to overcome his enemies. Yet his spirit always rose, and he became more hopeful. He was capable of doing mean and wicked things, but he repented so bitterly that we are told he was a man after God's own heart.

THE NEXT THINGS TO MAKE AND TO DO ARE ON PAGE 5331.

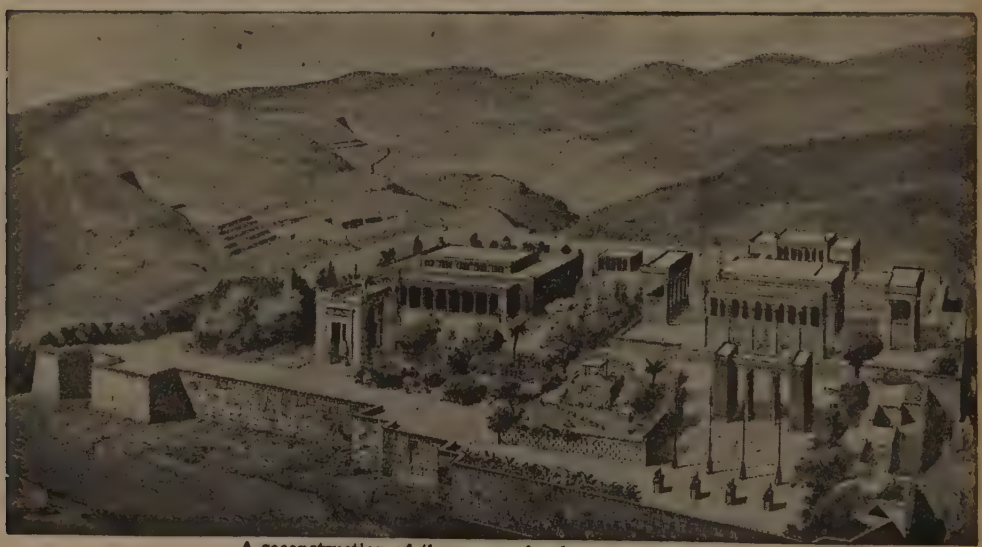
Reliefs on the wall of the Temple of Dendera.

Column in the Temple of Dendera.

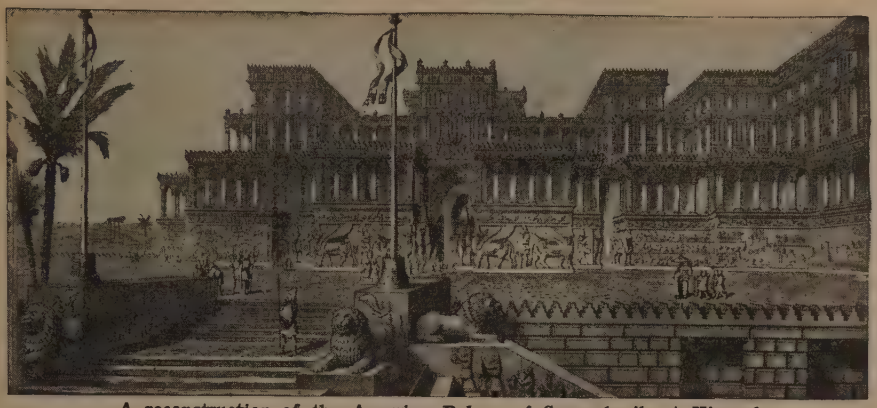
The Hypostyle Hall of Xerxes at Persepolis as it probably was.



The Hall of a Hundred Columns at Persepolis as it may have appeared.



A reconstruction of the group of palaces at Persepolis.



A reconstruction of the Assyrian Palace of Sennacherib at Nineveh.

THE BUILDINGS OF THE OLD WORLD

WE have been reading and thinking of the art of the world, its sculpture and painting. We have been trying to understand something of the spirit of beauty that has lived through the ages, free and uncaptured, and is now just as mysterious and powerful as when the first cave-man made his first drawing on the rocky wall of his cave.

And now we turn to another kind of inspired work, Architecture. At once we know that here is something more than art, though art has had its share in its workings.

The architecture of the world has been created: by religion, and the need of temples and churches; by tribal life, ruled over by kings, and the need for palaces; by the growth of organized society, and the need of public speaking places; by the development of domestic life, and the need for homes. For one or another of these reasons most of the great buildings of the world have been built.

It is something more than the instinct of beauty and the need for some building which has raised the piles of ancient Egypt, of Greece and Rome, of medieval Europe. Into them went something of the mysterious force that makes a country and its native people different from another. This is the reason why architecture can be truly called "history in stone."

Architecture as an art is different in this way from sculpture as an art. Statuary is statuary all the world over, whether of Parian marble or Purbeck marble, of bronze or stone. For the human form, with which statuary mostly deals, is, broadly speaking, the same all the world over. No such limitations apply to the art of building. A temple, hall or palace may be in any style, in any form. Architecture varies from one continent to another. It is affected by soil and climate, by the amount of sunshine, by the material at hand, and, above all, by the shape of thought, as one might say, of the people producing it—their religion, their beauty instinct, and the work of those who have gone before.

If we think for a few minutes we shall see that the subject of architecture has many approaches, many points of attack; and we shall begin to understand why the sight or picture of a great building has always moved us profoundly. A mass of stones, big or little, put together by men's hands—why should anything so apparently simple be so wonderful? We shall never know till we under-

stand the secret of life itself, and the working of the human mind, and what the Bible calls "the travail of the soul." But we go on trying to know. The power of beauty over us is happily so great that we shall take every chance of looking at lovely things—great buildings, great statuary, great pictures—and find them an increasing joy. And in so doing we shall build palaces for ourselves wherein our hearts may dwell secure.

The magnificent architecture of the world had its beginning in the first rude dwellings made by prehistoric men when they abandoned their caves. They were formed of masses of stones crudely put together, with stone slabs on the top for a roof. The first builders of the world were pleased and proud when they had made something satisfactory that resembled Nature's houses—caves. And for an indefinite period they were content with these dwellings. Therefore, when we hear of the great buildings of any powerful empire of the remote past we must remember that countless generations had passed before the art of construction had advanced to such a degree as to make temple-building possible.

PRIMITIVE BUILDINGS WHICH SERVE AS LINKS WITH THE PAST

There are remains of these early rude huts in various parts of Europe. Some very interesting ones are in Brittany. Curious beehive-shaped huts can still be seen on Lewis in the islands of the Hebrides, in Wales, and in Cornwall, England; and at Stonehenge are fragments of one of the earliest temples in Europe. It consisted of a huge circle of massive pillars, placed equal distances apart, with heavy horizontal stones, set in an unbroken round, roofing the space between the pillars. Other sets of enormous masses of stone lay inside the circle, flanking the slab on which sacrifices were placed in the time of the Druids.

All the races of the world, developing at different times, passed through this stage of primitive building. The first peoples to produce anything that might be called architecture were the Egyptians and the Chaldeans. It has generally been understood that the most ancient buildings of all were made by the early Egyptians. But we to-day are living in a marvelous age, when the past is being reconstructed before our eyes. Recently loads of rubbish were dug out of the oldest temple on earth, which was discovered near Ur of the Chaldees, in Mesopotamia. This was the birthplace of Abraham, and was already an ancient city when he set out across the Syrian desert to find a home.

The temple was built some five thousand years before the birth of Christ. Until another, still more ancient, is dug out of the mounds of buried cities like Ur, it has the honor of being the oldest in the world, and it is the forerunner of the famous temples of Chaldean history.

THE ANCIENT STORY LYING BURIED IN THE EARTH

We are indebted to archæologists and excavators for nearly all our information about the buildings of Chaldea, or early Babylon, or Assyria. Little was known about them, for they were buried for many centuries under mounds of earth until excavations began about the middle of the nineteenth century. From the ruins and fragments unearthed the shape and plan of actual buildings have been reconstructed, helping us to form a good idea of their size and shape.

The "land between the two rivers," the plain of the Tigris and Euphrates, was soft and marshy, and that was why palaces and temples were built on huge platforms and terraces, and rose to several stories. There was little or no stone, no timber; consequently brick and masses of sun-dried clay were used.

Most of the buildings unearthed belong to one of three great periods. First there was the Babylonian, or Chaldean, time—from about 4000 B.C. to 1300 B.C. Then came the conquest of Babylonia by the Assyrians, and that era lasted from 1300 until 538 B.C., when Assyria in turn was conquered by the Persians. The style of architecture that ran through these eras was almost unchanged; the Persians merely added a richness of their own to the power of their predecessors.

The chief buildings of ancient Babylonia were temples, palaces, and curious pyramidal towers called *ziggurats*, or "holy mountains." The Chaldean priest-astronomers used to make their observations from the summit of these towers. One of them, which, according to Babylonian records, was rebuilt by Nebuchadnezzar, has been excavated. It was a huge erection, built in ascending stages, the last of which carried a temple to Nebo.

THE CITY WALL WITH A HUNDRED GATES OF BRONZE

Towers of all kinds were a favorite feature of Babylonian architecture, and in that flat land they must have rewarded the kings who had them built. In the city of Babylon, girdled by its enormous wall that was broken by one hundred bronze gates, there were two hundred and fifty towers. It must have been a very wonderful city, with its palaces and temples and towers—one of them doubtless the Tower of Babel, so richly described in the Bible. The crowning glory was Nebuchadnezzar's palace, the famous Hanging Gardens of which were raised on a series of arches some seventy feet high.

It is interesting to know that these early peoples, being dependent for building on small things like bricks, soon evolved the form of the curved arch; while in the not-very-distant land of Egypt, where great masses of stone were found, big enough to go across wide openings, arches were unnecessary, and therefore almost unknown.

THE GRANDEUR OF BABYLON FOUR THOUSAND YEARS AGO

For this same reason—lack of material—the columns, which give great natural dignity and beauty to a building, were absent from Babylonian architecture. But another kind of dignity was attained by means of the great mass formation of the temples and palaces, the enormous stepped platforms from which, by narrowing stages, the buildings climbed up.

This architecture was more imposing than beautiful, and gave an idea of strength, of lion-like power. Somewhere about 2000 B.C. Babylon was at the height of her grandeur. But a city built only of baked mud and bricks, with just a little stone here and there, could not, in the nature of things, endure many centuries. "And Babylon shall become heaps," said the prophet. Fortunately for us, enough has been dug out of these heaps to help us, with a little imagination, to reconstruct the marvelous past of this queen of ancient cities.

A PLATFORM THAT TOOK TEN THOUSAND MEN TWELVE YEARS TO BUILD

Nineveh usurped the place of Babylon in importance under the Assyrian conquest, and her kings seemed to take a delight in building new palaces, leaving the old temples to suffice for themselves. The excavated palace of Sargon at Khorsabad, the most important, gives some idea of the monarch's sense of grandeur. It covered about twenty-five acres, and stood on a great platform fifty feet high, made of bricks faced with cut stone. We know that these buildings of the Old World were raised by forced labor—even in the days of medieval Europe. The thousands of prisoners-of-war who formed part of the booty of any Eastern campaign were flung into the builder's service. It has been estimated that one of these Assyrian palace platforms took ten thousand men twelve years to construct.

We think of this palace of Sargon in amazement, with its system of corridors and quadrangles, its seven hundred rooms, its principal court with three entrances guarded by great towers, where man-headed, winged animals twelve feet high were set in pairs as sentries. These monstrous creatures—lions or bulls—now stand in the Assyrian Hall of the British Museum in London. They are awe-inspiring there, but they must have been terror-inspiring when set in place by the palace portals, high above the plain. So did the bloodthirsty, fighting Assyrian kings try to show their grandeur in their buildings. When scholars reconstruct their buildings we seem to have a perfect social history of the time. We know of the kings' tyranny because of the labor necessary to build these palaces; we know of their vainglory from the subjects of the frescoes on the walls; we know the people were of no account because of the humble dwellings of ordinary citizens.

THE WONDERFUL PALACE OF PERSEPOLIS AND ITS HUNDRED COLUMNS

When the Persians under Cyrus and Cambyses (525 B.C.) became the masters of the Orient, they combined the architecture of Assyria and Egypt. Their greatest skill centred in the palaces and tombs of Susa and Persepolis. Some of the tombs were cut out of the rock, like that of Darius; others were set on pyramidal, stepped platforms, like that of Cyrus. Although Persepolis was by nature set on a platform, they still kept to the idea of the Assyrian royal builders. The platform of the famous palace, or group of palaces, at Persepolis was partly hewed out of rock and partly built. Stone was handy, and another kind of architecture was the result.

Here is something else of the Old World for us to ponder—a palace that had an approach of shallow steps some twenty feet wide, which horsemen could ascend, and a great entrance with piers of shining, glazed brick, and the Assyrian man-headed bulls as guard. Within this palace at Persepolis was the famous Hall of the Hundred Columns, a wonderful place with its cedar roof upheld by the hundred columns, thirty-seven feet high, of whose ranks one solitary shaft now stands. It is a pity that Alexander the Great could find nothing better to do than to burn the Hall of the Hundred Columns, along with other places, when he conquered Persia.

The Persians made everything glorious in color and grouping. The palaces of Susa and Persepolis were like kings in their glory, set with glazed bricks that shone in blue and green and yellow. On page 3876 we read of their decorative art applied to their architecture, of the frieze of archers which the Louvre treasures for the whole world.

Jewish architecture shows the influence of Egyptian, Assyrian, Greek and Roman. It has no independent national style. Its greatest achievement is the Temple of Jehovah, in Jerusalem, built three times over on the original plan of Solomon and finally destroyed by the Romans.

THE MASSIVE TOMBS OF EGYPT THAT WERE BUILT FOR ETERNITY

Fortunately for the world, Egyptian architecture, because of its nature, the material used, and the climate of the country, has proved more enduring than that of the Eastern empires.

We have seen that the whole spirit of the Egyptians' art and architecture was deathlessness, duration. Their skill centred in the tombs, which they built, not for time, but for eternity. It was an architecture of religion, very different from that of Assyria and Persia. Kingship and godhead and priesthood were very much mixed up in the character of the monarchs of early Egypt. Palaces were of little interest to them. Their temples, and their tombs—where their bodies would be preserved through long ages until the spirit came to life again—were of absorbing interest; and on them this strange nation, almost unchanged in its four thousand years of life, spent its austere beauty, its solemnity and its ponderous architecture.

THE SECRET OF THE STRENGTH OF THE OLD EGYPTIAN BUILDINGS

The Nile, the life-giving river of Egypt, was the centre of the people's national existence, and on its banks were built their great temples and tombs. Stone and granite were plentiful. They were quarried in huge blocks. The Egyptian builders were single-minded in their productions. They were not trying to be clever. They wanted their buildings to last forever: every line, every detail, was subjected to this idea. In this way they were greater artists, greater architects, than they knew.

The chief characteristics of their architecture can be traced to three causes: their passion for duration, their climate and the material they worked with.

The buildings were conceived on a simple plan. The outer surface of the outer wall in almost every case inclined inward a little. The inner surface made a perpendicular line, so that a wall cut through would seem, looking at its thickness, something like a buttress. Thus the Egyptians contrived to build a wall that no ordinary earthquake and no ordinary enemy attacks could shake down. In no two temples or pyramids was the angle of inclination the same The builders had no rule: they had only an absorbing idea.

The Egyptian climate was partly the cause of the unbroken lines of their massive walls. In that land of eternal sunshine there was no need to set windows in a temple. A sufficient amount of light came in through the door, or through slits high in the wall near the roof, or sometimes through a kind of clerestory, as in one of the halls at Karnak. The blind appearance of the walls has a good deal to do with the severity and secrecy peculiar to these buildings. The sense of rhythm necessary to keep a wall from looking "dead" was supplied by the repetitive lines of the frescoes and sculptures.

THE GREAT COLUMNS WHICH SUPPORT THE HEAVY ROOFS OF STONE

The material used set the style of Egyptian buildings, a style marked by columns and square-headed openings, which were roofed—trabeated is the technical word—with unbroken slabs of stone or granite. The habit of roofing their halls with slabs of stone led to the necessity of placing columns at intervals to support the slabs.

The columns evolved by the Egyptians are very interesting, and they develop as the architecture develops, with little change, during the long course of its life. And by these columns the interiors of massive buildings were kept alive, so to speak. For a building that has good columns, or good repetitive lines, possesses the peculiar quality that we have spoken of before—a rhythmic quality akin to the steady break of waves on the shore and to the throbbing pulse of great poetry.

The earliest columns were in obvious imitation of flower forms, grooved to imitate bunches of stems, with something like a lotus flower for the capital. This design—combined with a great sturdiness of size, as we should imagine—became simplified and amplified at the same time. Before the architecture of Egypt ceased her builders had produced some of the most beautiful columns the world possesses. Some of them remind us of the Doric column, which the Greeks carried to perfection.

As their skill in architecture grew and their temples rose, their immense architectural statuary likewise grew. They seemed to know that something was needed to connect their gaunt temples with the footways of men. It became a habit with them to form approaches of long avenues of the mysterious creatures to whom the family name of sphinx has been given. The bodies were always bodies of lions, and the heads were, according to some inscrutable decree, either those of human beings or those of birds or of rams. We all know about the Great Sphinx, the chief of these, huge beyond thought, which was partly chiseled out of the rock, and partly put together, like a building. The desert, perhaps alone knowing why this monstrous thing was set there, had kept its secret in its own fashion, covering it with sand for centuries. In 1816 the sand was cleared away, and the inscription revealed that the Sphinx had been built about four thousand years before Christ.

THE AMAZING PYRAMID BUILT TO HIDE THE BODY OF A KING

Near the Great Sphinx, at Gizeh, are the equally famous three great pyramids, the oldest Egyptian tombs, so far as we know. The chief of these, known as the Great Pyramid of Khufu (or Cheops), a king of the Fourth Dynasty, has, like the Sphinx, passed into the world's everyday speech as a symbol of unreasonable size and mystery and of eternal duration. It seems strange that a building, a solid mass of granite and stone 482 feet high, should have been constructed solely to hide the body of one king.

It is built of limestone on a plateau of rock leveled to receive it, and was finished on the outside, like its two neighbors, with a coating of polished stone. It contained three chambers and an elaborate system of inclined passages. The other two pyramids differ in arrangement and size, but not in construction.

Tombs of varying sizes and forms mark, like Time's sentinels, the slow passage of the thirty dynasties of Egyptian monarchs down the four thousand years of the nation's life. Some of them took the form of pyramids like those at Gizeh; some were rock-hewn, in the vertical cliffs of the west bank of the Nile Valley, like the group at Beni-Hassan, and show by their columns and general plan that a sense of art was developing along the lines of architecture. A later group of royal tombs, near ancient Thebes, were constructed in another manner, corridors being burrowed into the rock, leading to a succession of chambers, in the innermost of which the sarcophagus was placed. One of these was the tomb of Tutankhamen, and we know from that sepulchre what a wealth of art was spent on the burial of an ordinary king whom history has not greatly distinguished.

THE SPLENDID TOMB OF AN ARCHITECT OF THE PYRAMIDS

The tombs of important private persons were of another character, and generally known as *mastabas*. They were peculiar rectangular mounds of masonry, the outer walls sloping inward in characteristic fashion. Three chambers were generally arranged for in the interior. In the innermost the sarcophagus was placed. A very famous mastaba, beautifully decorated in relief, was built at Sakkâra, near Gizeh, for the body of a great personage called Thi, who was the architect of some of the pyramids.

Generally speaking, Egyptian temples belong to the later half of the country's history. They appear more like huge royal chapels than public places of worship, and were marked by something of the same secrecy that was part of the scheme of the tomb. Only the king and

his priests might penetrate into the sanctuary. A considerable number of temples were built along the Nile banks, the most important ones at Thebes.

ONE OF THE CHIEF GLORIES OF EGYPTIAN ARCHITECTURE

They were all built, with variations, on the same plan. To enter, one passed down an avenue of sphinxes and in between the entrance *pylons*—huge towers with sloping walls and a giant obelisk in front of each. From the entrance one passed into the outer court, with double columns on three sides, open to the sky. Then into the Hypostyle Hall. This part of the temple has been called the chief glory of Egyptian architecture. It was roofed in, and set thickly with columns of varying beauty according to the period of the temple, and most beautifully decorated. The centre rows of these columns ran up higher than the rest, and thus formed a kind of clerestory as light came through barred stone windows set between the upper parts of the high centre columns, and lighted the hall below just as a clerestory gives light to a church or cathedral. Beyond the Hypostyle Hall lay the sanctuary and other chambers connected with priestly offices. Round the temple building ran a monstrous projecting wall as high as the highest hall.

On their obelisks—immense monoliths, square at the base and tapering to the top—the Egyptians spent a great deal of time and labor. The Roman emperors carried a great many away when they conquered Egypt, and there are about a dozen still to be seen in Rome. Cleopatra's Needle, on the Thames Embankment, in London, was one of two obelisks set in front of a temple at Heliopolis, built about 1500 B.C.

The most wonderful of all the Egyptian buildings is the Great Temple of Amen-Re, the chief of the group at Karnak and Luxor. It was begun by the king about 2466 B.C., and after a long lapse was added to by first one pharaoh and then another. Thus the erection covered many hundred years. Upon it the greatest architectural and sculptural art of Egypt was spent. The Hypostyle Hall alone might stand for a monument of grandeur of this extraordinary nation.

Another temple to Amen-Re was built in the side of the rock at Deir-el-Bahari by the great Queen Hatshepsut who lived about 1500 B.C. She had a wonderful sense of beauty, and the columns of her temple, standing in tiers on terraces, and decorated in colored relief, must have been very arresting.

THE ANCIENT TEMPLES THAT STAND ON THE BANKS OF THE NILE

Temples of all periods, with bewildering names, still stand on the Nile banks at Abydos, Edfu, Abu-Simbel and other places. One of the greater ones, the temple of Isis, at Philæ, built about 300 B.C., is submerged by the river part of the year, so that only the upper portion of the wonderful columns can be seen.

It would seem that the architecture of the Old World was passing through great stages. Babylon and Assyria made it lion-like, fierce and strong; Egypt made it, above all things, colossal and enduring. To Greece it was left to make architecture supremely beautiful, of such unquestionable proportions as to be a standard for all succeeding peoples.

Greek architecture was not entirely the work of the Greeks as we know them. It did not spring up complete, evolved on its own shores out of nothing. An earlier people began it—the people of the Ægean civilization; and when it began to develop in the hands of the Greeks, two influences were brought to bear upon it. The effect of Egypt is traceable in the kind of architecture called Doric, because of the style of column used, and that of Assyria in the kind of architecture, called, for the same reason, Ionic.

We know from our chapters on painting and sculpture how, long before what we know as the empire of the Greeks arose, a happy, beauty-loving people were living in Greece and the islands of the Ægean Sea. The architecture they evolved—a simple, rude style—is known as Pelasgic, or Primitive. Its most interesting examples are shown in the remains of what is called the *Tholos*, or Treasury, of Atreus, a curious, beehive-shaped erection; the Palace; the Gate of the Lions; and the city wall at Mycenæ. Then there is the palace at Tiryns, and the Minoan palace at Knossos, Crete, lately excavated. This home of King Minos is the oldest of the Pelasgic buildings, dating from about 3000 B.C., with additions at later times.

When the Greeks became masters of the Ægean, from this rude beginning their architecture began to grow.

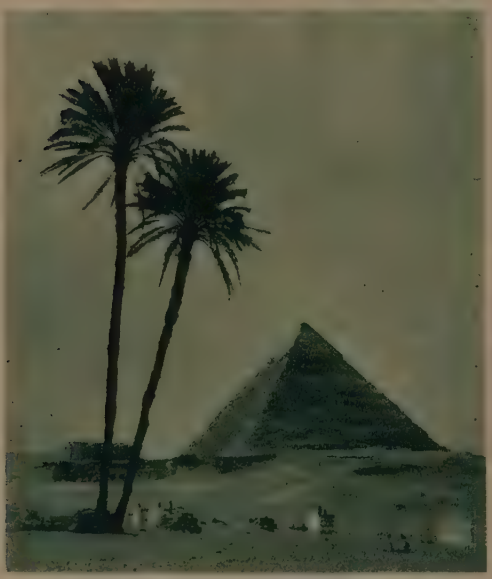
THE NEXT STORY OF THE FINE ARTS IS ON PAGE 5341.

BUILDINGS OF THE OLD WORLD

THE TEMPLE AT PHILÆ, NOW DROWNED FOR PART OF THE YEAR BY THE WATERS OF THE NILE

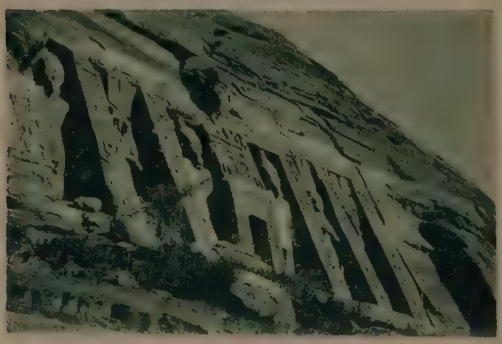
THE GREAT PYLON AT THE END OF THE AVENUE OF SPHINXES AT KARNAK

THE IMPRESSIVE TEMPLE OF LUXOR



THE SECOND PYRAMID OF GIZEH, WITH ITS ORIGINAL LIMESTONE TOP

THE STEP PYRAMID AT SAKKÂRA, BELIEVED TO BE THE OLDEST OF ALL



THE FAMOUS ROCK TEMPLE AT ABU-SIMBEL

THE SPLENDID COLUMNS OF THE TEMPLE OF LUXOR

THE DOUBLE PYLON OF THE TEMPLE OF ISIS AT PHILÆ

THE STATUES OF RAMESES AT THE ENTRANCE TO THE ROCK TEMPLE AT ABU-SIMBEL

THE FORECOURT OF THE TEMPLE OF ISIS AT PHILÆ

THE THRONE ROOM IN THE MINOAN PALACE AT KNOSSOS, IN CRETE

THE TOMB OR TREASURY OF ATREUS AT MYCENÆ, IN GREECE

THE ROCK TEMPLE OF AMEN AT DER-EL-BAHARI ON THE NILE

COLUMNS OF THE HYPOSTYLE HALL AT KARNAK

THE GREAT PYLON OF THE TEMPLE OF EDFU

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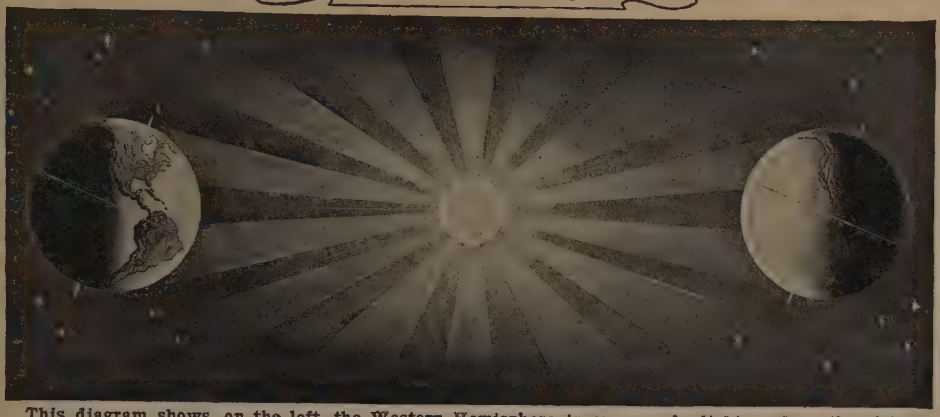


This diagram shows, on the left, the Western Hemisphere in summer daylight, and on the right the same hemisphere in the darkness of a winter night.

WHAT IS A DAY?

A DAY of twenty-four hours is the period adopted by common consent as the standard unit for measuring time. All longer intervals, such as weeks, months and years, are multiples of a day. Shorter intervals, such as hours, minutes and seconds, are fractions of the day.

A day may be defined as the space of time which elapses between the successive returns of the sun to the same point in the heavens. But to measure this period is by no means simple. In any case the period of the sun's reappearance at the same point is not always the same.

Another matter that has to be taken into consideration is the fact that the sun does not appear as a point of light like a star, but as a disk of appreciable size. Different parts of the disk arrive at a given point in the heavens at different moments. The consequence is that when we speak of the sun's reaching a given point in the heavens, the words have no definite meaning unless we say exactly what point of the sun's disk we mean. The point in question is the centre of the disk. It is the successive returns of this point to a certain position in the heavens that must be observed to mark the passing of the day.

The centre of the sun's disk is not marked by a visible point, and its passage cannot be directly observed. How can we know the exact moment of its passing over the meridian, when it is at its highest point in the heavens? The difficulty is overcome in a simple way.

The sun reaches the meridian when the centre of its disk touches the highest point of its passage across the heavens. This is determined by an instrument called a transit circle, consisting of a telescope mounted on a fixed axis lying truly east and west. The telescope, when placed horizontally, will point exactly north and south. It can be moved on its axis so as to sweep the whole circle of the heavens passing through the point immediately over our head. Exactly across the field of view, and in the centre of the lense of the telescope, a thin wire is stretched to mark the meridian. By noting the precise time when the edge of the sun's disk touches this before it passes over, and noting also the time when the other side of the disk touches the line after the sun has passed over, we can find the instant when the sun's centre passed the meridian.

Sometimes we use the word day to mean the hours of light and the word night to mean hours of darkness. At the Equator days and

nights are of equal length throughout the year. As we go north or south toward the Poles light and darkness vary very much according to the season of the year. Sometimes we have very short days and sometimes we have very long days.

DID THE PEOPLE OF LONG AGO LIVE LONGER THAN THE PEOPLE OF TO-DAY?

No. In all sorts of old records we are told that people lived to great ages. But there are many ways in which this can be explained, one being that there were different rules of reckoning age in those days. All the evidence shows that the average duration of human life is increasing. The expectation of life of the people now is definitely longer than it was ten years ago, and far longer than it was a hundred years ago.

IF THE EARTH IS SHRINKING, SHALL WE EVER BE TOPPLED OFF?

No. When the earth or anything else shrinks, the stuff in it is not lost. It is merely packed more closely. What keeps us on the earth is its gravitation, and that depends on the stuff in it. The stuff is there, however much the earth shrinks. The force of gravitation at the surface, and therefore on us, will be more powerful as the earth shrinks, simply because this must mean that we get nearer to the great mass of it. There will be a limit, in any case, to the extent to which the earth shrinks, as there is to the shrinking of other things. The more anything shrinks, the more resistance there is to its shrinking any more. When anything begins shrinking, we must imagine that there is plenty of room between its atoms, and if it shrinks, they get nearer to each other. But soon there is less room between them, and the time will come when the force of the atoms squeezing against each other will resist the force that is making the thing shrink. When the two forces balance one another it will shrink no more. We see this at once if we watch a crowd gather. It goes on shrinking until elbows begin to press against elbows, and then it gets no smaller.

WHERE DOES THE WARMTH IN OUR BODIES COME FROM?

Our warmth is the result of the burning that goes on ceaselessly within our bodies. We do not realize how much this burning is, for we do not realize how much heat we are always losing from our bodies. If we lost no heat, our bodies would become as hot as boiling water in a few hours. All this heat is made by the burning of our food. It burns, as other things burn, by combining with oxygen, and that is got into the body by our breathing. The chief part of the burning that produces our heat occurs in our muscles, and in the large gland—the largest in the body—called the liver.

We may think of the muscles as the fireplaces of the body, and the fuel burned there is mostly fat and sugar. A great deal of heat is produced when a muscle contracts, and that is why hard exercise makes us so hot. Even when the muscles are still, this making of heat is always going on. The liver, too, is always active, and we know that the blood leaving the liver is hotter than the blood going to it.

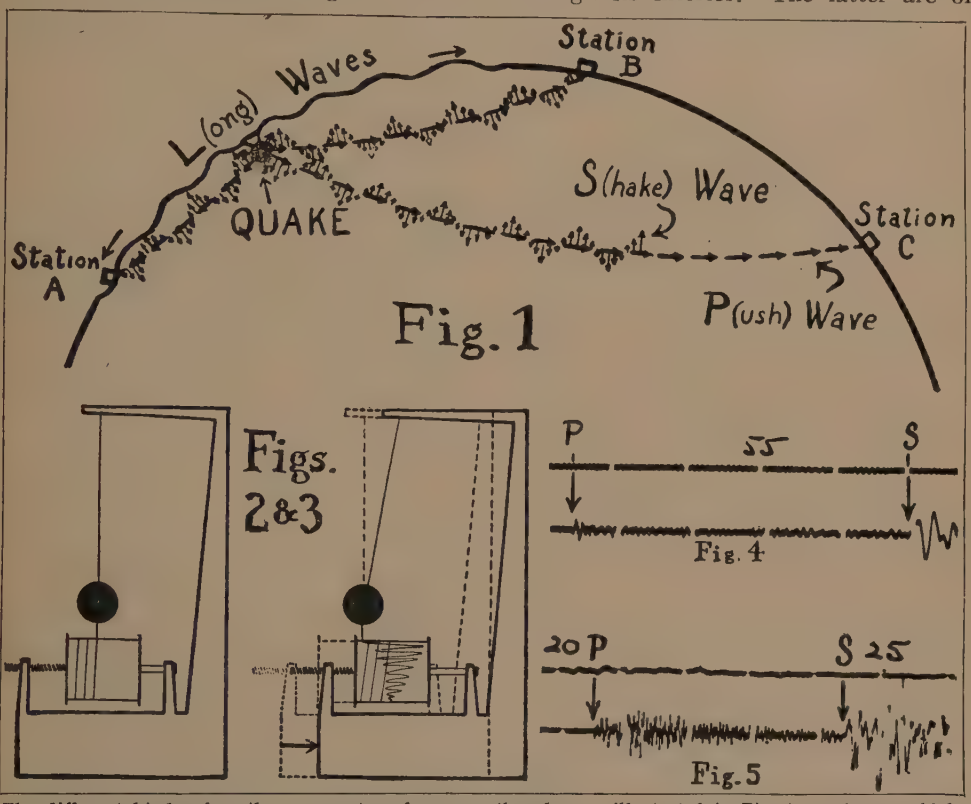
Though all parts of the body do not produce equal warmth, they are all kept at about the same temperature by the circulation of the blood. This circulation takes heat from the hottest places, such as the liver, and gives it to the coldest places, such as the fingers and toes.

WHAT MAKES THE PUPIL OF THE EYE GROW LARGER AND SMALLER?

If we think of a very small, but thick, rubber ring, we shall understand the answer to this question. The pupil is simply the hole inside this ring. The ring in our eye is not made of rubber, but it is elastic. It is made of muscular fibres that run round the pupil and inclose it. The name of this ring is the iris. In front of the iris and behind it are layers of cells which contain coloring matter, and it is these that give our eyes their color. When we look at anyone's eye we can see this colored muscular ring and the black hole in the middle of it. When the muscular fibres contract, the pupils grow very small. We can see this happen in anyone if we cover his eyes and then throw a strong light on them. In the darkness the iris relaxes and stretches, and then the pupil gets very large. The use of this beautiful arrangement is to regulate the amount of light falling into the eye. If we go into a dark room straight from the sunlight we can see nothing, but in a few moments things become visible. The reason is that our iris has relaxed, the pupil has become larger and more light is allowed to enter the eye.

WHY DOES HOT WATER CRACK THICK GLASS MORE EASILY THAN THIN?

Hot water cracks thick glass more easily than thin, because the heat causes the expansion of the inner layer of the glass while the outer is still cool and unexpanded. The expansion of the inner layer tears the outer layer, and so the glass is cracked right through.



The different kinds of earth waves set up by an earthquake are illustrated in Fig. 1, as they would be received by seismographs at A, B and C. Figs. 2 and 3 show the principle of the seismograph; in Fig 3 the frame is being shaken by earth waves, but the weighted pen lags and thus traces the waves on the cylinder. Figs. 4 and 5 show actual seismograph records. It will be seen that the shake waves (S) always follow the push waves (P). The upper lines were made by the preceding revolution of the drum. The numerals indicate the time.

Drawings by Father J. Lynch, Fordham University, N. Y., reproduced by courtesy of The Scientific American.

HOW DOES AN EARTHQUAKE REGISTER ITSELF ON A MACHINE?

Earthquakes in any part of the world are recorded in scientific laboratories by means of an instrument called a seismograph. The principle on which such instruments work is shown in the pictures on this page. A heavy weight is delicately suspended and to it is attached a pen which touches a revolving cylinder moved by clockwork.

When an earthquake occurs it sets up vibrations in the earth which reach the place where the seismograph stands. The tremors shake the framework holding the cylinder, while the suspended weight with the pen lags. The result is that the pen records a wavy or zigzag line on the cylinder, more or less defined according to the strength of the quake.

As shown in Fig. 1, a quake sets up waves both along the earth's crust and through its interior. The latter are of two kinds, push waves and shake waves. The speed of both kinds is definitely known, and the push waves travel faster than the shake waves. Each makes a characteristic record in the seismograph. From their distance apart—the distance between P and S in Figs. 4 and 5—the scientist can calculate how far away the earthquake is. To tell where the quake actually occurred, he needs at least three pens, one recording vertical movements, one horizontal movements east and west, and the third horizontal movements north and south.

In some modern seismographs a beam of light does the work of the pen. This beam is reflected from a tiny mirror on the suspended weight to a roll of photographic paper which, like the drum, is moved by clockwork. The developed paper then shows the earthquake record.

WILL THE SUN EVER BE AS COLD AS THE EARTH?

Yes; this must happen. To make something from nothing is an impossibility. Every moment, without ceasing, the sun is giving out enormous power in the shape of light, heat and other things. If the sun were all the time getting from somewhere else as much power as it is giving out, then it need not cool down. Astronomers have very carefully studied this question. The sun gets a certain amount of power from shooting-stars falling into it. It also probably gets a certain amount of power from radioactive substances in it. It also gets certain power from the light of the other stars. This is nothing, however, compared with the power the sun is spending. The sun must therefore cool down and become, we have no doubt, like the countless thousands of cold stars or suns which we know exist in the spaces of sky. This need not trouble us very much, however, for it will be more years than we can count before it happens.

FOR WHAT PURPOSE DO HUMAN BEINGS HAVE FINGER NAILS?

Our nails are all that is left to us of certain things the lower animals have and make great use of—claws and hoofs. We live by our minds, not by things like claws—except when we lose our minds and go to war! As we have not sufficient use for claws, they have grown smaller and weaker, until we have nothing left but nails. Yet there is no doubt that they are really the same things as the claws the cat uses for fighting, climbing and tearing food. The hoofs the horse uses for walking on are another example of it. The ancestors of the horse had five fingers and toes, as we have, and a nail, or hoof, at the end of each. All these, except the middle ones, have shrunk in the horse, until in him we find only one that reaches the ground and the remains of another on each side. The horse's hoofs are really the nails of its middle fingers and middle toes. They are made of the same material as our nails and can be cut without pain.

WHY DOES THE SEA NEVER SEEM TO BE ABSOLUTELY STILL?

There are times when the sea is nearly still, though no doubt even when it looks like glass, there are waves in it too small for us to see. But the sea is almost always moving, and it moves because the air above it is moving.

If there were no wind, the sea would slowly swell up and fall again, owing to the tides made by the moon. It would do this very quietly, so that if you looked just for a moment you would notice nothing. But the waves are made by the wind. It is true that the sea may have great waves though there is no wind, but those waves were raised by the wind somewhere else. They may have traveled hundreds of miles to reach our eyes.

Only a short distance below the surface the sea is quiet. There are no such things as waves "mountains high." If you could see the water not many feet down, during the greatest storm, you would find it quite still.

WHAT IS IT LIKE ABOVE THE CLOUDS?

Just above the clouds the air is bright and clear. The sun—or the stars by night—can be seen with sharp distinctness. It is interesting to fly over the clouds and see the earth far below.

But airplanes have ascended only about ten miles. Above that point studies have been made by scientists sending up free balloons, and passenger balloons. A Frenchman, de Bort, found that up to 11,000 meters (about seven miles) above the earth the temperature dropped about six degrees centigrade with every 1,000 meter (.621 mile) rise; but above 11,000 meters, he found a region of constant temperature, which we call the stratosphere. You may read on page 350 of Professor Piccard's ascent into the stratosphere. It is a cold region, but free from storms and with only moderate winds, though below it winds are strong. There is little water vapor in the atmosphere, and no clouds.

It has been suggested that airplane travel through the calm stratosphere would be far less hazardous than through the lower atmosphere which is subject to sudden storms and fog.

HOW DOES A BIRD KNOW HOW TO BUILD ITS NEST?

It is by the power of what we call instinct. Human beings have very little instinct; we have to learn for ourselves

almost everything we do. The instinct of animals, however, shown in the spider's web or the bird's nest, is quite different. There is no learning at all. Many animals have to do a most difficult thing only once in their whole lives, and after doing it they die. We know for certain that they have never seen any other animal do it. They have never learned, they have never practiced, yet they do it perfectly. That is the power of instinct. The weakness of it is that it can do only what it is made to do. It is for this reason that intelligence is so greatly superior to the best instinct.

WHAT MAKES THE WATER RIPPLE WHEN WE THROW A STONE INTO IT?

It is one of the great laws of nature that when anything is at rest it stays at rest until something moves it; and when anything is started moving it will go on moving till something stops it. If nothing stopped it, it would go on moving forever. This is true of the stone and of the wave the stone makes when it strikes the water. When a stone strikes water, or when a sound is made in the air at any point, or when a light is made, a wave motion is started which travels out in all directions and will go on traveling until something stops it. One of the things that stop it in the case of a water wave is friction, which simply means rubbing, as the parts of the water push against each other. It is quite natural that as the wave gets bigger and wider it spreads out its power over more space. And the waves are not so high when they reach the bank as when they were started.

HOW IS POWER CARRIED TO A DISTANCE?

There are various ways of sending power to a distance. One method is by means of steam produced in a boiler and passed to an engine some distance away, where it either turns a turbine or drives a piston. A second method is by direct mechanical means, as when a belt passing over a revolving wheel or pulley carries the motion some distance away to another pulley over which the belt also passes. A third method is by electricity, the power being carried as current, sometimes for great distances. A fourth method is by compressed air, as in the tools which are used for cutting coal, drilling rock, or driving home rivets in boilers and ships. A fifth method is hydraulic transmission, as when continuous pressure on a column of water in a pipe will raise an elevator or work a press. The newest of all methods is that known as wireless transmission of power. This consists in sending out enormously strong radio waves. However, it is still in the experimental stage.

IF FISH BREATHE UNDER WATER, WHY CANNOT WE?

As we know, there is air dissolved in water, and it is this fact that enables creatures to exist under the water. A fish has a special part of its body made for the purpose of getting the air out of the water. The water is taken in by the fish and allowed to flow along very close to the blood-vessels in what are called the gills. As the water flows past these blood-vessels it gives up to them part of its oxygen, and takes from them their carbon dioxid. But we have no gills. Our lungs are made for breathing air only, and we die of suffocation in water. Besides, our need of air is much greater than that of a fish, and even if our lungs were capable of getting the air out of water that might be inhaled into them, there would not be enough to keep us alive.

WHAT MAKES FLAMES DANCE IN AN OPEN GRATE FIRE?

If coal were a simple thing, such as pure carbon, and if it were evenly supplied with a steady draft of air, the firelight would not dance, but would be quite steady. It dances as it does because the processes of burning go on so irregularly. For one thing, the supply of air is not always the same, because the draft up the chimney is affected by the movements of the wind at the top of the chimney.

But that is not all. Imprisoned in coal is a great quantity of gases of various kinds, all of which can be burned. As the coal breaks up these gases escape. It is when they burn that they make the beautiful flames of various colors which flicker and throw a dancing light into the dark corners of the room.

If we burn coal from which the coal-gas has been removed—coke, as we call it—we get a very hot fire with very little flame, because we are burning practically nothing but solid carbon. In an ordinary fire a certain amount of the gases and a great deal of the carbon itself go up the chimney unburned, which is, of course, a great waste. That is part of the price we have to pay for our cheerful open fires.

DOES THE EQUATOR GO ROUND FASTER THAN THE POLES?

Any point on the Equator must move faster than a point on or near either of the Poles, because the earth spins on an axis running through the Poles as a ball might spin on a knitting needle thrust through its centre. We can think of the knitting needle as running through the ball from Pole to Pole. The earthly ball spins round once in twenty-four hours. Near one of the Poles, say within a mile of it, a point would have to travel less than four miles in the day. But on the Equator, which is more than 24,000 miles round, a point would travel a thousand miles an hour.

WHAT MAKES SOME APPARENTLY HEALTHY PEOPLE DUMB?

As a rule, the cause of dumbness has nothing to do with the vocal cords. These cords are generally present and apparently normal, but for some reason or other in people who are dumb they cannot be used. Although the brain may produce an idea, and the person may wish to speak, something has happened to prevent the message from being sent from the brain to the vocal cords. So there is no speech. Any disease or injury which destroys that part of the brain called the speech centre, or any disease or injury to the nerve fibres which pass from the speech centre to the vocal cords, will cause dumbness. But the greatest number of cases of dumbness are caused by deafness. A child learns his mother tongue by imitating the sounds he hears from the people around him. But if he has never heard a sound he does not realize that people are making sounds which mean something. Although his vocal cords may be perfect, yet he does not know enough to use them.

WHY IS IT THAT YAWNING SEEMS TO BE INFECTIOUS?

A yawn is a very deep breath. It depends, as a rule, on the fact that from one cause or another our breathing has fallen below what is needed. The yawn is an attempt to make it up. It is a very well known fact that one human being can affect another by what is called suggestion. One person sees another afraid, and himself becomes afraid. If everyone around us is laughing and happy, we begin to laugh and feel happy; or if they are all miserable, we become miserable, too. And so yawning is more powerfully conveyed by suggestion—infectious, as we say—than almost anything else, because it happens to deal with the most urgent need of all life, which is to breathe. Generally, however, people are infected with the desire to yawn only when they themselves are tired or exhausted.

IS THERE ANY WATER ANYWHERE EXCEPT IN OUR WORLD?

Oxygen and hydrogen, which form water, are found wherever we look for them through the universe. In the case of our own solar system we can prove that wherever the temperature is not too high oxygen and hydrogen, if found together, will combine to form water. That is true of our own earth. But the sun's temperature is too high for it to be true of the sun. We should expect some of the other planets to be cool enough for water to be formed. In the case of the planet we know best, which is Mars, this appears to be so, though the whole question of what the white patches on Mars are is not finally settled.

WHY DO TWO SIDES OF A ROAD SEEM TO MEET IN THE DISTANCE?

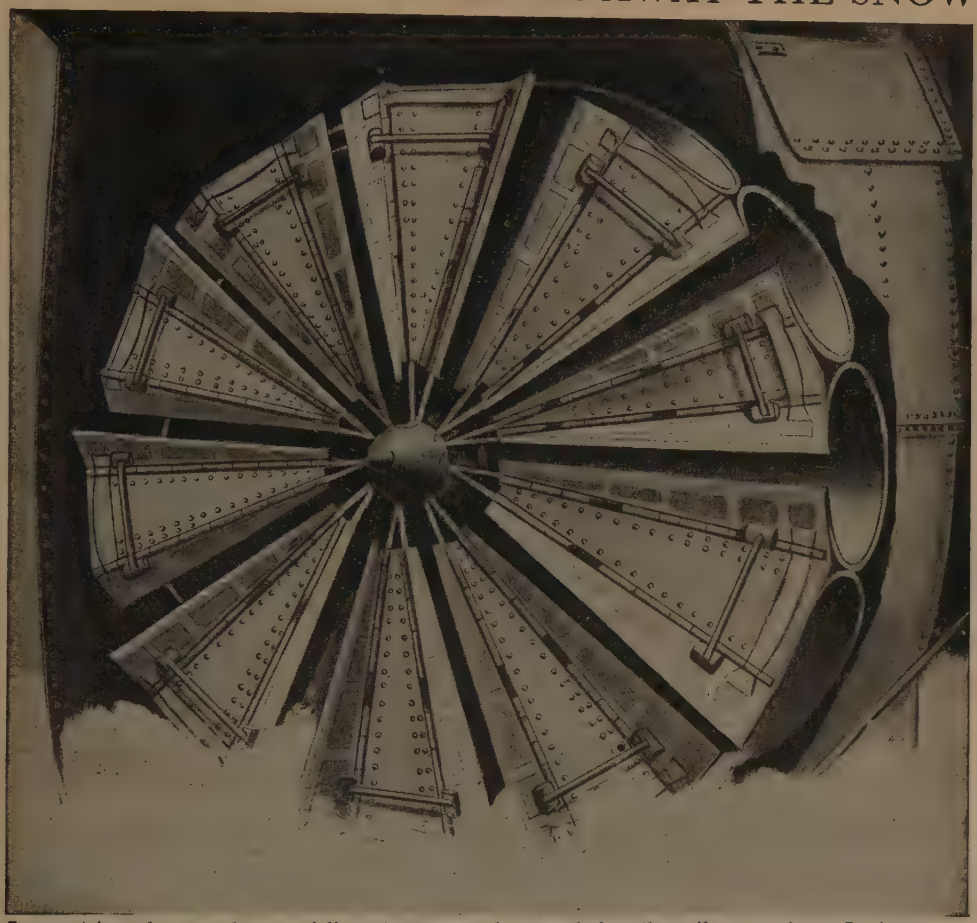
We know the sides of the road do not meet, but they seem to meet. If an artist is showing in a picture a road going away from us, he must really draw the two sides of the road toward each other, so as to give the eye the same impression that a real road does. This is part of the study which artists call perspective—how things look when they are *seen through*, which is what the word means.

Our eyes judge by the angle between things. Let us suppose that we use only one eye, to make it simpler. If we look at two dots, we judge of the distance between them by the width of the angle between the two lines from them to our eye. Suppose the same two dots the same distance apart are much farther away from the eye; the angle between the lines is much narrower, and so they seem much nearer together. If we imagine that the dots are taken on the sides of the road at different distances along, we shall see why the sides seem to meet in the distance. They do not really get nearer, but the *angular distance* between them gets smaller.

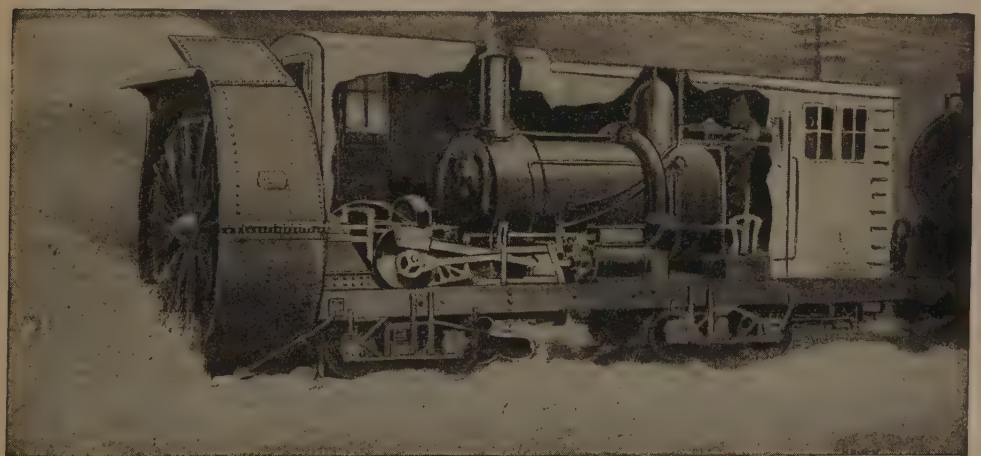
DOES THE SUN EVER CROSS THE NORTHERN SKY?

The sun does sometimes cross the northern sky. It depends on the place

HOW THE ENGINE CLEARS AWAY THE SNOW



In countries where much snow falls, rotary snow plows go before the railway engines. In front is a revolving wheel fitted with curiously shaped shovels or scoops, and these have hinged knives to cut the snow. The revolving shovels then hurl the snow to the side of the track.



The rotary snow-shovel is worked by an engine like that shown in this picture. It is very powerful, and is completely housed in by a covering to protect it and the men working it from the weather. The artist has removed some of the covering to show the engine.

from which we are looking at it. It is the northern half of the world that most of us live in. To us the sun has always appeared to shine in the south.

But ages ago, when men voyaged south of the Equator and rounded Africa, they saw the sun shining in the north. This was ridiculed when they came home. We now recognize that this account of what those travelers saw is good evidence that they did what they said they had done.

Whatever part of the world we are in, the sun rises in the east and sets in the west, because the whole earth is spinning in the same direction, and it is that spin which makes the sun appear to rise and set. But if we are looking at the sun from the northern half of the planet it appears to travel across the sky in the south; while if we look at it from the southern part of our planet it seems to travel across the sky in the north.

WHAT IS MEANT BY THE VATICAN CITY?

For over a thousand years the Pope was not only the ruler of the Church, but also of considerable territory. Pope Gregory VII in 1077 could keep the German emperor Henry IV waiting in the snow at Canossa, as you may read on page 2848. More than a hundred years later Pope Innocent III was the actual ruler of all the world.

During the later Middle Ages the political power of the Holy See declined somewhat, but in the Nineteenth Century the Pope still ruled over 16,000 square miles in Central Italy, with a population of 3,000,000.

With the rise of the Italian national state the Pope was deprived of all his lands in 1871, and in protest became a voluntary prisoner in the Vatican, the magnificent Papal palace at Rome.

It was not until 1929 that the Pope again became a temporal sovereign, when a treaty with Italy established the State of Vatican City in the heart of Rome. This state contains only 108.7 acres, including St. Peter's, The Vatican and its gardens. But it is absolutely independent and the Pope is the undisputed ruler over its one thousand inhabitants. Vatican City has its own laws, money, stamps, railway, police and a radio station donated by Marconi. The State was purposely kept small, to indicate that it stands as a symbol of independence rather than of political power.

IF OUR SKIN IS WATERPROOF, HOW DOES MOISTURE PENETRATE IT?

The skin is truly waterproof and will let nothing from outside get into it. But it is almost everywhere pierced by tiny tubes that run out through the waterproof layer to the surface, from the true skin that lies underneath it. These tubes carry the sweat made by the little glands in the true skin. Water could, perhaps, get into these tubes, so that the skin would not be waterproof, if it were not that the sweat, coming out of them, forces back anything that might enter. If anything did enter, it could not get far, for it would find itself in an exceedingly tiny blind alley—the inside of the sweat-gland. If we rub into the skin very hard something such as cod-liver oil, which the sweat-glands are willing to take up into themselves and give to the blood, we can succeed in making it pass inward through the skin. Also, by means of electricity we can make liquid things pass in through the skin. But otherwise it is truly waterproof—in one direction.

WHAT IS THE DIFFERENCE BETWEEN FAT AND OIL?

Oil is a misleading word, for it is used in two senses. We describe as oil the things that give plants their smell, such as turpentine, but they are quite different from other oils. We should always call them *volatile oils,* which means "flying oils," because they readily fly into the air in the form of a gas. If we put a drop of such an oil on a piece of paper it soon disappears. But if we put a drop of any of the other kind of oils, such as melted butter, on a piece of paper, it makes a mark which stays. These oils are called *fixed oils.* The simple thing to remember is that fixed oils and fats are really the same thing. When it is solid we call it fat; when it is liquid we call it oil. A fixed oil is melted fat, and fat is a fixed oil that has turned solid. Every fat has a melting-point, as we call it, when it is so warm that it melts and turns into oil. Every fixed oil has a freezing-point, when it is so cool that it solidifies and turns into fat.

It is a very interesting thing about the fat of our bodies that its melting-point is just the temperature of the blood. So the fat of our bodies is always just at a point where it is neither quite solid nor quite liquid. This is the state of it that suits us best. If the fat were quite solid, the

blood could not easily help itself to it as it was needed. If it were quite liquid, it would not stay in one place. There are hundreds of different fats and oils and mixtures of them.

How many stars can we see without using a telescope?

Most people imagine they see countless myriads of stars in the sky, but the whole number of the stars that can be distinguished by the naked eye is probably only about five thousand. Seldom are more than two-fifths of this number visible at the same time. The number actually seen is about two thousand.

Will the world's food supply ever run short?

It is quite certain that, as people cannot live without enough food, there never will be more people than there is food for. The struggle for life is, in the first place, a struggle for food. For a large number of people all over the world the struggle is so severe that many babies and children are killed by it every year, directly or indirectly.

But the number of people in the world steadily increases, and doubtless always has increased since mankind came to be; and steadily the amount of food has been increased by human effort. Men learned how to tame and care for sheep, oxen and goats, and so obtained flesh and milk. This pastoral stage—pastoral comes from the Latin word *pastor,* which means "shepherd"—yielded to the agricultural stage of growing crops, which supports far more human life than the pastoral stage alone could.

It is probable that some day there must be a limit, though we are nowhere near it yet. When freed from the insects which carry disease and stand in the way of man, Africa alone will be capable of holding and feeding five hundred million people more than it does now. As for Australia, who can say or who will dare to prophesy?

Where does the oxygen in the sun come from?

It is rather difficult to understand, but we must remember that a thing may be intensely hot and glowing and flaming without any burning or combining with oxygen going on. The thread inside an ordinary electric lamp is an instance of this. Long ago astronomers thought that the sun's heat and flames were due to burning going on in the sun, as it goes on in a fire on the earth. Then they came to ask themselves practically just the question we are asking: "If the sun's heat and light are due to combustion, where does all the oxygen come from, and where does all the fuel come from?" If the sun were burning as a fire is burning, it would have burned itself out millions of years ago. There is nothing like enough material in the sun to account for all the light and heat it produces. Therefore, burning as we understand it, which is combining with oxygen, has little to do with the sun's heat and light. The sun's supply of light and heat is kept up in other ways, partly by its ceaseless shrinking, partly by the breaking-up of the atoms of elements in the sun, but chiefly by glowing carbon and calcium.

What are halcyon days?

The Greek name for kingfisher is halcyon, a compound word made up of *hals,* the sea, and *kuo,* to brood on. According to an ancient legend in Sicily, the kingfisher laid its eggs on the surface of the sea and sat upon them for fourteen days just before the winter solstice. During this fortnight the sea was entirely calm, the winds were still, and a golden peace settled upon the world. Therefore halcyon days are days of quiet, dreamlike beauty.

Why are we sure that pure water has no taste?

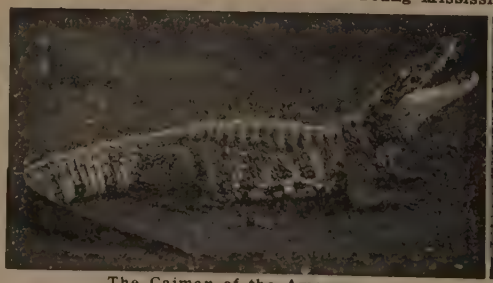
Pure water has no taste. But probably not one in ten thousand of us who read this question ever tasted pure water unless he or she has been to the chemist's and tasted water that has been distilled. The ordinary water we drink has quantities of air dissolved in it, and these give it a taste. It also has a certain amount of salts dissolved in it. If we boil water we drive off the gases in it and it becomes tasteless and flat. That is the reason why one of the ways in which to spoil a cup of tea is to let the water *go on* boiling before we make the tea. Why pure water should have no taste is very plain. Our bodies consist mainly of water. The nerves of taste, and their endings in the tongue, depend on water to dissolve substances. Things that taste must be soluble if the taste-buds are to carry on their duties. Therefore we should not expect water to be one of the things that excites them. If it were, we should be tasting it all the time.

THE NEXT WONDER QUESTIONS ARE ON PAGE 5361.

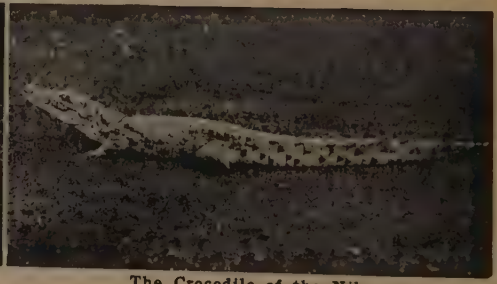
MEMBERS OF THE CROCODILE FAMILY

The Gharial of India.

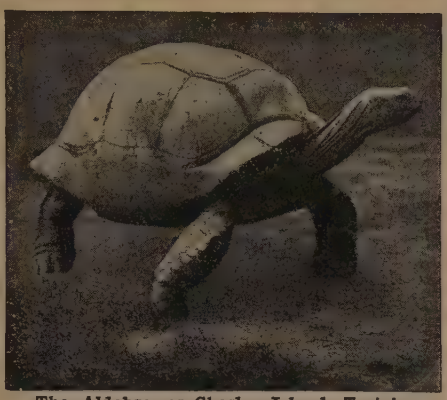
Young Mississippi Alligators.



The Caiman of the Amazon.



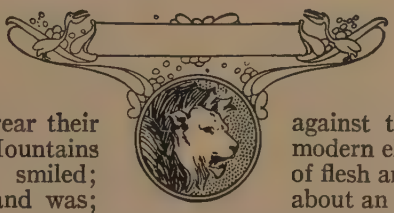
The Crocodile of the Nile.



The Aldabra, or Charles Island, Tortoise.

The Leopard-tortoise.

THE MARVELOUS REPTILE FAMILY



THE face of the earth has been largely remodeled since reptiles began to lay their eggs and rear their young on land. Mountains frown where valleys smiled; seas roll where dry land was; old lakes are high and dry on the brows of hills; field and meadow bring forth crops where once ran river and ocean; and cities have risen in the parched throats of dead volcanoes since the reptiles grew great, and the greatest of them perished, leaving us a scanty posterity.

Their origin was humble; their increase in species, in form, and, above all, in size remains one of the marvels of created life.

They filled all the places now occupied by the natural orders existing to-day. They lived on land, they lived in rivers and lakes, they covered the surface of the sea. They crowded the air with pterodactyls, some with wings twenty-five feet from tip to tip. In actual bulk the whale, which floats like a submarine in water, and therefore needs but little support, still outrivals them, but no land animal does. Nothing approaches the size of those old giants of the land and marsh.

The great vegetable-eating dinosaurs reached a length of sixty feet in the Brontosaurus, while the Atlantosaurus was eighty feet long and thirty feet high. These dinosaurs must have weighed from twenty to thirty tons, as against the five tons of a fine modern elephant. For each ton of flesh and bone they possessed about an ounce of brains. They consumed vegetation, and other dinosaurs arose to consume them in turn. Flesh-eating dinosaurs must have been the most appalling creatures that ever stalked the earth—forty feet long and fifteen feet high.

Many species remained small, but in every direction there arose Titans of their various orders. Our leathery turtle weighs well on toward a ton, but one animal of the kind in those days had a head five times the size of our biggest type. Egypt had a dreadful snake forty feet long; India had crocodiles fifty feet long, and Australia had lizards half as great.

All the great reptiles are gone. How came these masters of creation to pass out of life?

It is believed by some authorities, such as Dr. Roy Moodie, that many of these great reptiles may have died from certain diseases prevalent at this time. Other authorities attribute the extinction of the dinosaurs not to diseases, but to great climatic changes or to the mammals which existed at the close of the Age of Reptiles and may have fed on the eggs of dinosaurs.

THE FOUR ORDERS OF REPTILES IN THE WORLD TO-DAY

Of all the host of lordly forms to which the reptile world gave rise but four orders survive. We have the Crocodiles, the Tortoises and Turtles, the Lizards and Snakes, and the ancient lizard-like Tuatera.

These orders are broken up into many groups, so that we have over a score of crocodile species, upward of 1,800 species of lizards, and about as many snakes. But altogether the species do not much exceed 3,500, a number which excels only the amphibians among backboned creatures and is insignificant compared with the mammals, birds and fishes.

Like all other reptiles, the crocodiles and alligators are cold-blooded. Their temperature rises and falls with that of the surrounding air, so fortunately they cannot exist in less than subtropical heat. But in favorable conditions they may be expected in every river or lake where man or other agency has not exterminated them. In the old, old, far-off days there were both alligators and crocodiles in Europe. We find them deep down in the clay on which London is built, and in many other places.

THE WEAK SPOT IN THE TERRIBLE ARMAMENT OF THE CROCODILE

That rough covering of the Crocodile is a masterpiece of plate and mail. Imbedded in the skin are bones, and on these are plates of horn. They are extremely supple, though, owing to the formation of certain vertebræ in the neck, they are unable to turn the head, a fact to which many a man has owed his life.

The great body, which may be twenty feet long and more, and may go on growing for perhaps two centuries, is carried on lizard-like legs. The limbs are, of course, for walking on land and at the bottom of the water. The huge, powerful tail serves to drive the brute through the water. It serves also as a weapon.

A blow from that mighty tail, which can be swung with furious force and amazing speed to and fro, suffices to knock a man or a big deer off his feet, in readiness for a hideous grapple. But it is in the water that most havoc is wrought by the reptile. Here it is assisted by as strange a contrivance as is to be found in nature.

The nostrils are mounted high at the tip of the snout. They open, not into the mouth, but actually into the windpipe. A corresponding modification of the fleshy parts of the mouth shuts off the throat from the breathing apparatus, and valves close or open the external nostrils.

The result is efficiency perfected. A victim is seized and pulled under the water and held there till it drowns. But all the time it struggles its captor has its mouth wide open and is breathing calmly. The nostrils open above the water; the distended mouth permits no fluid to enter the throat; the crocodile murders in safety and comfort.

THE RIVER WHERE CROCODILIANS SWARM LIKE TADPOLES IN A DITCH

When life is extinct in the prey, then the reptile has to dismember it. Its teeth are adapted to grasping and rending, not to mastication, not to bite cleanly like those of lion or wolf. The brute seizes a mouthful of flesh, and gives one or two great convulsive wrenches from side to side, and so effects a parting.

The force that is in these movements may be inferred from a scene described by the naturalist Henry Walter Bates, who at one time explored the Amazon. He found the upper waters of the river swarming with crocodilians as a ditch swarms in summer time with tadpoles. To this centre of danger at Caicara came a number of incautious native boatmen, one of whom, in senseless bravado, plunged alone into the water.

As he did so a pair of cavernous jaws opened, grasped his waist, and disappeared with him in the stream. The man's comrades set out in search in their boat. They followed a trail of blood floating on the water, and suddenly the alligator rose to the surface. It had made its kill and its worry; in its mouth was a leg of the man it had captured.

THE GREAT LIST OF VICTIMS OF THE CROCODILE IN AFRICA

Generally speaking, no waking man need fear one of these reptiles on land, though a sleeper or a sick man would suffer the worst. But in the water the voracious fury of the crocodile is the very stuff of which nightmares are made.

Though no figures can be gathered, it has been said that more deaths are caused in Africa by crocodiles than by any other wild beast. In 1923 Mr. C. F. M. Swynnerton, Game Warden of the Tanganyika

Territory, exhibited before a London gathering of scientists the contents of the stomach of a crocodile which he had killed. There were many quills of a porcupine not completely digested; 11 heavy brass arm rings, such as natives wear; three coiled-wire armlets; a glass bead necklace; 14 arm and leg bones; three spinal columns; 18 stones of various sizes, and a length of fibre cord which had bound some bundle borne on the head of a native who had become a meal for the crocodile.

The Crocodile Family is divided into at least three groups: the Caimans of South America and Central America, the Alligators of North America and of certain Chinese rivers, and the Crocodiles which are common to Africa, Asia, Australia and North and South America.

It must have been the Caiman that the first white men in the New World saw. They called it *el lagarto,* which is the Spanish name for a lizard, and the name became changed in time to alligator.

Caimans and alligators are more closely related to each other than to crocodiles, though the Chinese alligator is nearer in design to the caiman of South America than is the alligator of North America. Both kinds are broader and shorter in the head than the crocodiles, and specialization seems to have gone farther in the caiman than in any other species, for here the bony plates are united into an undivided armor, extending in one species to form a sheath for the legs.

THE MOTHER CROCODILE THAT WATCHES OVER HER EGGS IN THE SAND

There is little difference in the habits of these reptiles. All are flesh-eaters, though from force of circumstances many live largely on fish, and all have a value as devourers of carrion, which would poison river, lake and stream. All migrate when home waters dry up, but where streams merely run low the reptiles bury themselves in the mud and wait for damper days to return.

All are egg-layers. The numbers of eggs vary from twenty to as many as one hundred. Some crocodiles dig deep pits in the sand, lay their eggs there, cover over the hole, and keep watch, even brooding on the spot till the young are near hatching. Low barks from within the eggs tell of dawning life, when the mother excavates the sand which covers her brood.

The babies escape from the goose-sized, hard-shelled egg by means of a cutting implement on the end of the snout, resembling the egg tooth of a baby bird. The caimans and the alligators lay their eggs in heaps of decaying vegetation and leave the heat of the mass to effect incubation, like the brush turkeys.

The crocodiles proper have undergone specialization into groups remarkable for certain peculiarities into which it is impossible now to enter. There is one, for example, which has so short a head as to be called the short-nosed crocodile; and there is the opposite extreme in the long-nosed crocodile of West Africa, whose slender snout enables it to catch fish, frogs, and birds with swift dexterity. This brute is eighteen feet long, and sometimes longer.

Two crocodiles which interest us are the Nile and the Estuarine crocodiles. The first is a monster which the Egyptians worshiped. They tamed it, kept it in tanks at the temples, especially at Thebes, and when death overtook it they preserved it, in mummy form, as a holy relic. Similar superstition renders crocodiles objects of veneration in India today.

THE GREAT TRAVELER OF THE CROCODILE FAMILY

The taming consists, of course, in feeding the creatures so well that they have no need to forage for themselves at the cost of human life. But, on the other hand, there are known places where crocodiles have dwelt for generations, taking constant toll of human life, yet were spared, from religious fears, by the natives.

The Nile crocodile is not quite the giant of the family, for the Estuarine crocodile carries off the palm for size. The latter is a huge savage horror as long as five men laid in a line, with still a margin to spare, for estuarine crocodiles ranging up beyond twenty-eight feet have been killed, and there is no reason to suppose that the mightiest have yet been measured. Nor have the largest known reached the limit of possibilities, for there is no reason why these lusty monsters should not go on growing as long as they have health and vigor enough to pursue man, animal, fish and any bird to feed the engines of their bodies.

The estuarine crocodile is the great traveler of the family. It is feared and detested in Indian waters; it is a scourge

of the Ceylon coast; it is loathed and fought in Australian seas. With such size and strength this crocodile is capable of terrible feats. When we think of these modern terrors which represent the dinosaurs in our age, we may imagine what were the gory deeds those fearful tyrants wrought in their day.

None of the species yet named gave us the largest of all crocodiles proper. That was the Gharial, India's famous river crocodile. Its long and relatively slender muzzle makes it specially efficient as a fish-catcher, but though men treasure it in the inland reaches, it does kill human beings. A gharial once attained a length of fifty feet.

A REPTILE THAT HAS NOT CHANGED FOR MILLIONS OF YEARS

The gharial is a very ancient animal; but a reptile still more ancient is the Tuatera—not a crocodile, but, in the eyes of most of us, a lizard. In reality this reptile of New Zealand is, though lizard-like in outline, as widely separated from modern lizards as lizards are from turtles. It is called the Beaked Lizard because of two enlarged teeth at the anterior end of the upper jaw. In fossil relatives of the tuatera this beak is very large.

With the technical details of its anatomy we cannot deal beyond recalling that in the tuatera was found a fairly well developed eye looking out of the top of the head. There may even have been a pair of such eyes. Probably neither is functional now, but the remnants are there to tell a wonderful story of what once existed at the summit of this strange creature's skull.

Long ago the ancestor of the tuatera and the modern lizard lived side by side. They differed from each other chiefly in the structure of their skulls. Modern lizards have departed much more from their ancestral type of structure than has the tuatera.

Perhaps the most primitive of modern lizards are the Geckos—little soft-skinned creatures, usually with great friction pads on their toes.

THE HARMLESS GECKO THAT IS FEARED BY THE PEOPLE OF THE EAST

A book is needed to do justice to the geckos alone in Africa, India and Australasia. Three hundred species are known, and three or four inhabit human homes, where they are famous hunters of insects. All are admirable climbers, though the structure of the feet differs considerably. In the best-known, friction pads beneath the feet give an unfailing grip, no matter what position the gecko assumes, up the windowpanes, across the ceiling, wherever fly or spider, beetle or cricket is to be met and munched.

In the East the gecko is feared by natives. It is said to poison food wherever its foot touches, and is called the father of leprosy. The truth is that it is perfectly harmless, whether it be one of the species that keeps to the cellar, one that keeps to the roof, or a third, which dwells in chinks and crannies of the walls of the house. It is amusing, valuable, becomes a capital pet, and is to be objected to only when its numbers are too many and its night-cries too lusty.

One of the many remarkable forms is the Fringed Gecko. This species has a fringe which is simply an expansion of the skin along both sides of its body. Here the ribs themselves, six or seven on each side, are prolonged to form supports for the membrane. The whole apparatus works like a fan, folding up when the reptile is at rest, expanding when its little owner flits by its aid from tree to tree.

REPTILES WHICH HAVE TRIED TO REGAIN THE MASTERY OF THE AIR

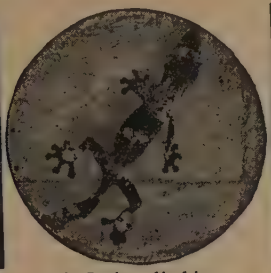
The Flying Lizards number upward of a score of species, and alone of reptiles seem to have tried to regain the mastery of the air which the old pterodactyls gained and lost. But in the group to which they belong, the agamoid lizards, are other freakish developments of frills.

Nothing is more extraordinary than that of the Frilled Lizard itself. This is a formidable-looking little ruffian between two and three feet long, with a frill springing from the throat and neck, opening and closing at will, and expanded when the creature is angered to enhance the frightening effect of an opened mouth, which in reality is quite innocent. We have caterpillars which assume threatening attitudes with far direr consequences than any of which the frilled lizard is capable.

Even more alarming in suggestion, though guiltless of offense, is Australia's Moloch, or Spiny Lizard. It is only eight inches long, but Nature has packed into it more ingeniously terrible armament of spines and prickles than into anything that lives outside the Cactus Family. We look on the moloch and realize what some

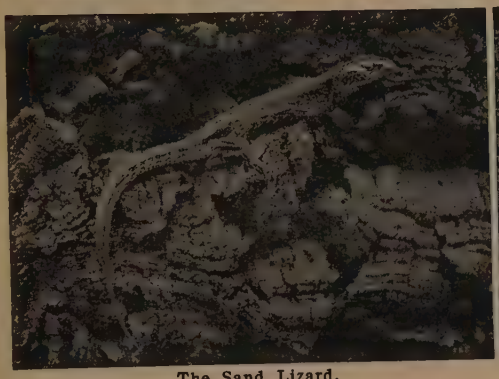
IMMENSE VARIETY OF THE LIZARD FAMILY

The Wall Gecko.



A Gecko climbing.

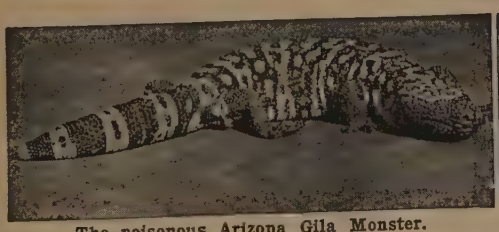
The Basilisk.



The Sand Lizard.

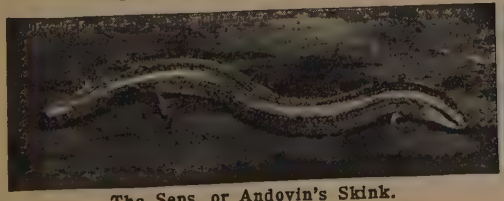
The Wall Lizard.

The Desert Monitor.

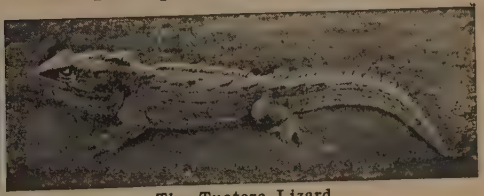


The poisonous Arizona Gila Monster.

The Cape Girdle-tailed Lizard.



The Seps, or Andovin's Skink.



The Tuatera Lizard.

of the giants in old-time armor must have been, and have a further help to reflection in the fantastic protection of the Spiny Tails, lizards of the Old World. Their tails, thickly beset with horny prickles, could never have suffered the indignity borne by the three blind mice of which the old rhyme sings.

In old times fancy played with horror round the Basilisks, an entirely harmless group of lizards belonging to the great Iguana Family. The basilisk was supposed to strike dead any who beheld it, man or animal, even snakes; and its fiery breath was so potent that it scorched the vegetation of its habitat. The fact is that the helmeted basilisk, with its newt-like frill and its horny helmet is fearful only in appearance; in habit and nature it is the most harmless of lizards.

THE TIRED LIZARD WHICH STOPS WALKING TO TAKE A NAP

So far we have been thinking of land lizards, but now we turn our eyes seaward and find the Sea Lizard of the Galapagos Islands, cutting a dash in the waves, and banqueting on seaweed—a giant lizard four and a half feet long. Keeping to the soil of the same islands is another lizard of note, the Land Iguana, which, weighing over ten pounds, is yet a foot less than its sea cousin. This is a strangely lazy beast, which will stay and nap in the midst of a walk, and dig its burrow with the limbs on one side of the body till tired, then rest and work with the other pair.

Other queer iguanas are the Rhinoceros Iguana, whose large horn on the snout suggests the name, and the Ring-tailed Iguana of the West Indies, remarkable for a big dilatable throat pouch, a ridge of prickles down the back, and a tail ringed with formidable little spines.

Lizards must be dainty food to some animals, or there would not be this elaborate system of defenses against hungry jaws. The Horned Lizard, to take another example, is armored with defenses not unlike those of the moloch, yet it is only the size of a well-developed toad. The scheme of the Girdle-tailed Lizards is less fantastic in pattern, but the mail of horny prickles is ornate enough to safeguard the most precious thing in nature.

Then at a step we reach lizards which have no more armament than little snakes. These are the so-called Slowworm group, of which in Europe there is the typical Slowworm, or Blindworm; while the Old World and the New generally have a relative in the so-called Glass-snake. The use of the word "worm" in this connection is a harking-back to old times when snakes were called worms. Even the supposed dragons sometimes went by this name.

THE LITTLE LIZARD THAT HAS LOST ALL ITS LIMBS

Our Glass-snake, then, is simply a much modified lizard which has lost its limbs as completely as some birds have lost flight. Like the slowworm, it is harmless, and is, of course, without poison. Unlike the snakes, it cannot withdraw its tongue into a sheath, and unlike them, it has the lower jaw in one solid piece of bone instead of in two halves united by a ligament.

There is, however, one type of lizard which is poisonous. That is the Gila Monster of the Western desert. There are two species of them, and both somewhat resemble our glass-snake in internal structure, though they retain all four limbs, and are brightly arrayed in colors which seem to advertise their noxiousness. Their poison is injected through grooved teeth when they bite, by the same method as that of some snakes. The venom of these lizards is potent enough to kill little animals, such as guinea-pigs, and to cause serious inconvenience to human beings.

It is fortunate that poison has never been added to the great group of lizards called Monitors, for here we have creatures measuring as much as seven feet long, and very powerfully built. They have a snake-like tongue, which is received, serpent-wise, into a sheath of muscles in the mouth. Some twenty species are distributed over Southern Asia, Africa, and the Australian regions. The Water Monitor, the giant of the group, common to India and Australia, is equally at home on land, in the trees, and in the water, be it river or sea. Eggs of birds and crocodiles form a large part of monitor diet. They are friends to man.

America has no monitors, but has developed a family closely resembling them in the Teju Lizards. Of these the Teguexins, handsome tropical lizards, a yard long, are the most notable. They never take to water, and are harmless unless attacked.

A LIZARD THAT BURROWS IN THE EARTH LIKE A WORM

We must note the Amphisbænians, too —extraordinary degraded lizards which have lost the hind legs and have become

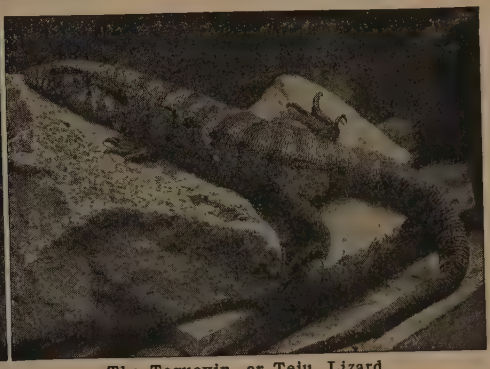
A QUEER AND ANCIENT TRIBE

The Verticilated Gecko.

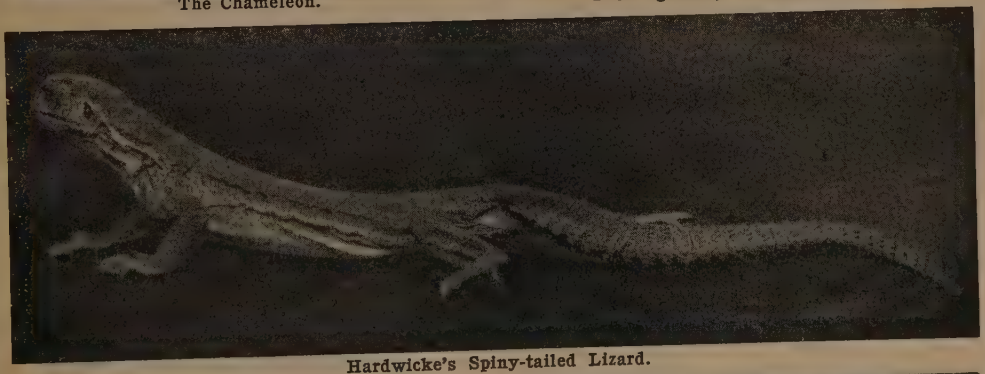
The Horned Lizard.

The Frilled Lizard.

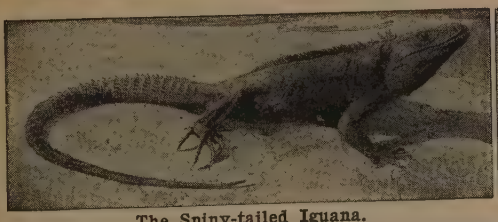
The Chameleon.



The Teguexin, or Teju, Lizard.

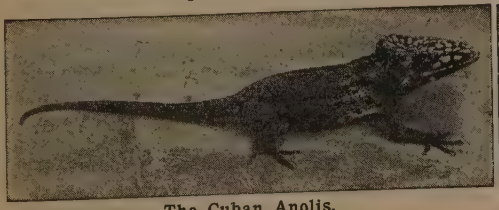


Hardwicke's Spiny-tailed Lizard.

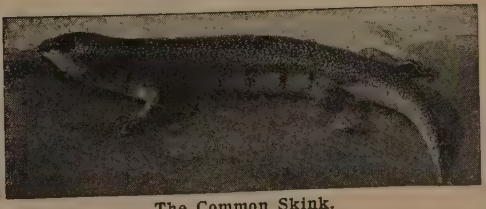


The Spiny-tailed Iguana.

The Galapagan Land Iguana.



The Cuban Anolis.



The Common Skink.

worm-like in outline and in habit, burrowing in the earth and moving backward and forward with equal facility. There are many other lizards with which naturalists are acquainted as friends and pets, notably the Green Lizard, a European which some of us have kept from time to time; the Viviparous Lizard, which carries its eggs in its body till they hatch and produce the young alive; the Wall Lizards of Southern Europe and elsewhere, which are as perfectly at home in banks and walls where the sun shines as crickets on the hearth. There is the Sand Lizard, too, a creature of sand bank, dry heath, and dusty hedgerow, common to all the warmer parts of Europe.

Then there is the great array of Skinks —a marvelously varied assembly—some with short, blunt tails; some with tails like helodermas; some shaped like four-legged snakes; or gigantic caterpillars with all but the first and last pair of feet and legs removed, and with a great stretch of unsupported body intervening.

The amazing rapidity with which the chameleon traps its prey

But even they have no more grotesque form than the members of the next family, the Chameleons. Here are creatures incredibly slow in all but the action of the long sticky tongue, which shoots forth to a distance of eight inches and more to catch an insect, in and out and back again, with fly attached, in the forty-fifth part of a second.

That is all the speed a chameleon possesses. With its extraordinary feet it clings to a branch and anchors itself further by its grasping tail-tip, and there it stands with eyes swiveling independently, changing color to suit its surroundings. This feat is not peculiar to chameleons; lizards, frogs and fish have the same gift, but not in the same measure.

We should not believe such things as molochs, amphisbænians, chameleons and some of the skinks really possible if we had not the actual reptiles to prove their astonishing story. How much more difficult, then, would it be to accept descriptions of unseen turtles and tortoises, had not we been familiar with examples of both from childhood! Here we have creatures locked up in fortresses of bone of widely differing designs. Some of the turtles take the sea and some of the tortoises keep the land, while others of their family are at home in pond and lake.

All are egg-layers, many are flesh-eaters, but the majority are vegetarians, especially among the tortoises. Beneath the bony covering exist ribs, joined, generally, to the carapace; and the rigidity of the covering renders it necessary for the limbs and neck to be used to aid breathing. Movements of these force the air from the throat down the windpipe, the nostrils closing valves to prevent its escape by any other passage than to the primitive spongy lungs. Naturalists have tabulated some forty species of land tortoises, widely distributed and including perhaps the longest-lived of all animals, some of them centuries old. One of the best-known of American varieties is the Brazilian Tortoise, two feet long, eater of herbage and windfall fruits, and, in spite of its great shell, itself a meal for puma and jaguar, which uprear the shell and tear the flesh out with their claws.

Leopard-tortoises, brown, radiated, and starred tortoises are in the same group, and described by their patterns, handsome in their way and big, but insignificant in comparison with the Giant Tortoises of islands in the Indian and South Pacific oceans. These examples descend from ancestors who had these island paradises to themselves from far-distant ages. There are still giants in this assembly; tortoises fifty-five inches long and weighing over five hundred pounds, creatures on whose back a man may ride. All of them are vegetable-feeders.

America has its tortoises, and some of them are familiar in our summer gardens, where they eat lettuce, grass and clover, but never beetles, which dealers guarantee them to kill. Perhaps the strangest of these land tortoises are the Hinged Tortoises of Africa and the Box Tortoises of America. When the reptile draws in its head and legs, movable sections of the shell cover the openings.

The safety which retreat to water confers has made the pond turtles less dependent than these on such defenses, and it is notable that the upper and lower halves of the shell are united only by a strip of bone.

Terrapin is only another name for water turtles, and is given to a great number of species which frequent estuaries and the higher reaches of rivers. They are well represented in America as well as in Asia and warmer Europe, and are famous in the New World as a form of

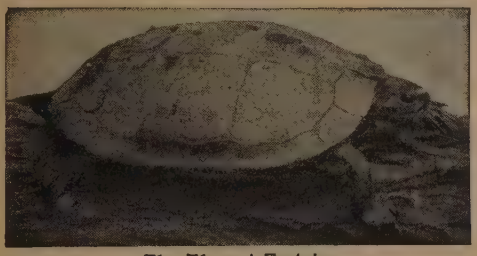
food for the table, and for many wonderful shell patterns. A European species, the Iberian Terrapin, is noteworthy as a sort of rival to the hermit crab with its associated sea-anemone. The terrapin in the water becomes covered with a dense growth of alga and so steals on its prey, disguised as a rotting log.

But the pond turtles do not equal the size of the sea turtles, which, keeping entirely to the sea for a living, have grown to greatness in the midst of unfailing plenty. In this group, as in the sea mammals, the fore limbs have been converted into paddles, and all are great swimmers. They leave the water only to lay their eggs.

Then, though they are but cold-blooded reptiles, they exhibit caution and cunning. The sight of a man will keep them off shore, and the females will retain their eggs for a long time rather than face unnatural risk. Landing in the still of night, they march inland to some point high enough to escape flood and high tide, dig deep pits in the sand and there lay their eggs. Then they return to the sea, but not by the way they came in, as if to lead astray any who should follow them to their nurseries. The young turtles, when hatched from the eggs, scratch their way out of the sand and may be seen with their mouths full of grit as they march to the water. Instinct is strong and overmastering with them. No matter what barrier is interposed, no matter how many times they may be diverted or even turned round and forced in an opposite direction, they make for the sea as a magnetic needle points to the north.

The Green Turtle, which is caught for the well-known soup, is a reptile weighing as much as the giant tortoises; but the Leathery Turtle, so named from the fact that its bony exterior is covered with a leathery integument, attains a length of six feet and weighs a thousand pounds.

The Leathery Turtle.



The Elegant Tortoise.

The Hawksbill Turtle.

The Hawksbill Turtle, a smaller species, ranging up to some three and a half feet, is the one which yields the tortoise-shell of commerce. Formerly the manner of getting this commodity was brutal in the extreme. The reptiles were roasted slowly till the plates split off; but that, fortunately, has all been stopped.

As with all lowly creatures, sea turtles are very tenacious of life. They live to great ages, they endure hardship amazingly. One has been known to live and bite a man's fingers off a day and a night after it had received an apparently mortal wound. In the next chapter we shall tell the strange tale of the serpents.

THE NEXT STORY OF ANIMAL LIFE IS ON PAGE 5409.

WHEN I'M GROWN UP

I THINK, when I'm a grown-up man
I'd like to be
A bus conductor if I can,
Or, let me see—

It would be very, very nice
To keep a shop,
Where I could eat vanilla ice
And never stop.

I'd like to be a soldier, too,
It must be fun
To lie down flat, as soldiers do,
And fire a gun.

And then I'd love to flour my face,
And be a clown,
Like two we saw, who ran a race,
And both fell down.

But when I'm tired, it seems to me,
What I enjoy
The best of all is just to be
My mammy's boy.

WHEN MUMMY'S AWAY

I WASN'T brave, I *had* to cry
The other day
When darling mummy said good-bye,
And went away.

The time seemed very, very long
Alone with nurse;
And everything I did went wrong,
Which made it worse.

For, as I ran across the hall
With Sybil Grace,
My fav'rite doll, I let her fall
And cracked her face.

And then I tumbled on some stones
And cut my knee;
Nurse tied it up, and gave me scones
With jam for tea.

Though she is kind, and mended Grace,
How could she tell
I wanted *mum* to kiss the place
And make it well?

But now my troubles seem to go,
And all is bright,
For mummy's coming home, I know
To-morrow night!

"And he buried him in a valley in the land of Moab, over against Beth-peor; but no man knoweth of his sepulchre unto this day."—Deut. 34:6.

THE BURIAL OF MOSES

This stately poem was written by Cecil Frances Alexander, the author of Once in Royal David's City and There is a Green Hill Far Away. She was born in Ireland in 1818 and died in 1895.

BY Nebo's lonely mountain,
On this side Jordan's wave,
In a vale in the land of Moab,
There lies a lonely grave.
And no man knows that sepulchre,
And no man saw it e'er,
For the angels of God upturned the sod,
And laid the dead man there.

That was the grandest funeral
That ever passed on earth;
But no man heard the trampling,
Or saw the train go forth:
Noiselessly as the daylight
Comes when night is done,
And the crimson streak on ocean's cheek
Grows into the great sun,

Noiselessly as the spring-time
Her crown of verdure weaves,
And all the trees on all the hills,
Unfold their thousand leaves;
So without sound of music,
Or voice of them that wept,
Silently down from the mountain's crown
The great procession swept.

Perchance the bald old eagle
On gray Beth-peor's height,
Out of his rocky eyrie,
Looked on the wondrous sight;
Perchance the lion stalking,
Still shuns that hallowed spot,
For beast and bird have seen and heard,
That which man knoweth not.

But when the warrior dieth,
His comrades in the war,
With arms reversed and muffled drum,
Follow his funeral car;
They show the banners taken,
They tell his battles won,
And after him lead his masterless steed,
While peals the minute-gun.

Amid the noblest of the land,
Men lay the sage to rest,
And give the bard an honored place
With costly marble drest,
In the great minster transept
Where lights like glories fall,
And the organ rings, and the sweet choir sings,
Along the emblazoned wall.

This was the bravest warrior
That ever buckled sword;
This, the most gifted poet
That ever breathed a word;
And never earth's philosopher
Traced with his golden pen
On the deathless page, truths half so sage
As he wrote down for men.

And had he not high honor,—
The hillside for a pall,
To lie in state, while angels wait
With stars for tapers tall,
And the dark rock-pines like tossing plumes—
Over his bier to wave,
And God's own hand, in that lonely land,
To lay him in the grave?

In that strange grave without a name,
Whence his uncoffined clay
Shall break again, O wondrous thought!
Before the judgment-day,
And stand with glory wrapt around
On the hills he never trod,
And speak of the strife that won our life
With the Incarnate Son of God.

O lonely grave in Moab's land!
O dark Beth-peor's hill!
Speak to these curious hearts of ours,
And teach them to be still.
God hath His mysteries of grace,
Ways that we cannot tell;
He hides them deep, like the sacred sleep
Of him He loved so well.

THE BELLS OF SHANDON

Francis Sylvester Mahony, the author of The Bells of Shandon, was born in Cork, Ireland, in the year 1805. He became a priest, and afterward gave up his calling to take his place on the staff of a magazine. He was a brilliant, witty and sarcastic writer, and his works are collected in a volume entitled Reliques of Father Prout. When he became older he retired into a monastery.

WITH deep affection and recollection
I often think of those Shandon bells,
Whose songs so wild would, in the days of childhood,
Fling round my cradle their magic spells.
On this I ponder where'er I wander,
And thus grow fonder, sweet Cork of thee;
With thy bells of Shandon,
That sound so grand on
The pleasant waters of the river Lee.

I've heard bells chiming full many a clime in,
Tolling sublime in cathedral shrine,
While at a glib rate brass tongues would vibrate—
But all their music spoke nought like thine;
For memory dwelling on each proud swelling
Of the belfry knelling its bold notes free
Made the bells of Shandon
Sound far more grand on
The pleasant waters of the river Lee.

I've heard bells tolling old "Adrian's Mole" in,
Their thunder rolling from the Vatican,
And cymbals glorious swinging uproarious
In the gorgeous turrets of Notre Dame;
But thy sounds were sweeter than the dome of Peter
Flings o'er the Tiber, pealing solemnly;—
Oh! the bells of Shandon
Sound far more grand on
The pleasant waters of the river Lee.

There's a bell in Moscow, while on tower and kiosk O!
In Saint Sophia the Turkman gets,
And loud in air calls men to prayer
From the tapering summits of tall minarets.
Such empty phantom I freely grant them;
But there is an anthem more dear to me,—
'Tis the bells of Shandon,
That sound so grand on
The pleasant waters of the river Lee.

SLEEP, BABY, SLEEP

This beautiful little lullaby is translated from the German. It has been set to very suitable music.

SLEEP, baby, sleep!
Thy father guards his sheep;
Thy mother shakes the dreamland tree,
Down comes a little dream on thee.
Sleep, baby, sleep!

Sleep, baby, sleep!
The large stars are the sheep;
The little stars are lambs, I guess;
The gentle moon the shepherdess.
Sleep, baby, sleep!

Sleep, baby, sleep!
Our Saviour loves His sheep;
He is the Lamb of God on high,
Who for our sakes came down to die.
Sleep, baby, sleep!

NATURE

In this poem Longfellow shows rare ability as a sonneteer. Because of its rhyme-scheme and its brevity the sonnet is a difficult form to write in. The smoothness and dignity of these lines give this poem a high rank among sonnets in the English language.

AS a fond mother, when the day is o'er,
Leads by the hand her little child to bed,
Half willing, half reluctant to be led,
And leave his broken playthings on the floor,
Still gazing at them through the open door,
Nor wholly reassured and comforted
By promises of others in their stead,
Which, though more splendid, may not please him more;
So Nature deals with us, and takes away
Our playthings one by one, and by the hand
Leads us to rest so gently, that we go
Scarce knowing if we wish to go or stay,
Being too full of sleep to understand
How far the unknown transcends the what we know.

TO THE NIGHTINGALE

O NIGHTINGALE that on yon bloomy spray
Warblest at eve, when all the woods are still,
Thou with fresh hope the lover's heart dost fill,
While the jolly hours lead on propitious May.
Thy liquid notes that close the eye of day,
First heard before the shallow cuckoo's bill,
Portend success in love. O, if Jove's will
Have linked that amorous power to thy soft lay,
Now timely sing, ere the rude bird of hate
Foretell my hopeless doom, in some grove nigh;
As thou from year to year hast sung too late
For my relief, yet hadst no reason why.
Whether the Muse or Love call thee his mate,
Both them I serve, and of their train am I.

—JOHN MILTON.

JUDAS ISCARIOT

Robert Buchanan, who died in 1901, was a poet, novelist and dramatist. He was born in England of Scottish parentage. One of his finest poems is an imaginative picture in ballad form of Judas Iscariot after he had taken his own life in remorse for his treachery to Jesus. We give here the last half of the poem. The first half tells how the soul of Judas takes up his body and searches in all kinds of wild and lonely places for somewhere to bury it where it will never be seen. For months and years he wanders, carrying the body and finding no place that will serve as a grave. Then, at last, he sees a far-off light across the lonely waste, and, creeping toward it, he reaches it after more days of rain and more nights of rushing wind, and the description proceeds.

'TWAS the soul of Judas Iscariot,
Strange, and sad, and tall,
Stood all alone at dead of night
Before a lighted hall.

And the wold was white with snow,
And his foot-marks black and damp,
And the ghost of the silvern Moon arose,
Holding her yellow lamp.

And the icicles were on the eaves,
And the walls were deep with white,
And the shadows of the guests within
Passed on the window light.

The shadows of the wedding guests
Did strangely come and go,
And the body of Judas Iscariot
Lay stretched along the snow.

The body of Judas Iscariot
Lay stretched along the snow;
'Twas the soul of Judas Iscariot
Ran swiftly to and fro.

To and fro, and up and down,
He ran so swiftly there,
As round and round the frozen Pole
Glideth the lean white bear.

'Twas the Bridegroom sat at the table-head,
And the lights burned bright and clear:
"Oh, who is that," the Bridegroom said,
"Whose weary feet I hear?"

'Twas one looked from the lighted hall
And answered soft and slow,
"It is a wolf runs up and down
With a black track in the snow."

The Bridegroom in his robe of white
Sat at the table-head—
"Oh, who is that who moans without?"
The blessèd Bridegroom said.

'Twas one looked from the lighted hall,
And answered fierce and low,
" 'Tis the soul of Judas Iscariot
Gliding to and fro."

'Twas the soul of Judas Iscariot
Did hush itself and stand,
And saw the Bridegroom at the door,
With a light in his hand.

The Bridegroom stood in the open door,
And he was clad in white,
And far within the Lord's Supper
Was spread so long and bright.

The Bridegroom shaded his eyes and looked,
And his face was bright to see—
"What dost thou here at the Lord's Supper
With thy body's sins?" said he.

'Twas the soul of Judas Iscariot
Stood black, and sad, and bare—
"I have wandered many nights and days;
There is no light elsewhere."

'Twas the wedding guests cried out within,
And their eyes were fierce and bright—
"Scourge the soul of Judas Iscariot
Away into the night!"

The Bridegroom stood in the open door,
And he waved hands still and slow,
And the third time that he waved his hands
The air was thick with snow.

And of every flake of falling snow,
Before it touched the ground,
There came a dove, and a thousand doves
Made sweet sound.

'Twas the body of Judas Iscariot
Floated away full fleet,
And the wings of the doves that bare it off
Were like its winding-sheet.

'Twas the Bridegroom stood at the open door,
And beckoned, smiling sweet;
'Twas the soul of Judas Iscariot
Stole in, and fell at his feet.

"The Holy Supper is spread within,
And the many candles shine,
And I have waited long for thee
Before I poured the wine!"

The supper wine is poured at last,
The lights burn bright and fair,
Iscariot washes the Bridegroom's feet,
And dries them with his hair.

MAIDENHOOD

Henry Wadsworth Longfellow is the author of this poem —a charming picture of a young girl on the threshold of womanhood.

MAIDEN! with the meek, brown eyes,
In whose orbs a shadow lies
Like the dusk in evening skies!

Thou whose locks outshine the sun,
Golden tresses, wreathed in one,
As the braided streamlets run!

Standing, with reluctant feet,
Where the brook and river meet,
Womanhood and childhood fleet!

Gazing, with a timid glance,
On the brooklet's swift advance,
On the river's broad expanse!

Deep and still, that gliding stream
Beautiful to thee must seem,
As the river of a dream.

Then why pause with indecision,
When bright angels in thy vision
Beckon thee to fields Elysian?

Seest thou shadows sailing by,
As the dove, with startled eye,
Sees the falcon's shadow fly?

Hearest thou voices on the shore,
That our ears perceive no more,
Deafened by the cataract's roar?

O, thou child of many prayers!
Life hath quicksands,—Life hath snares
Care and age come unawares!

Like the swell of some sweet tune,
Morning rises into noon,
May glides onward into June.

Childhood is the bough where slumbered
Birds and blossoms many-numbered;—
Age, that bough with snows encumbered.

Gather, then, each flower that grows,
When the young heart overflows,
To embalm that tent of snows.

Bear a lily in thy hand;
Gates of brass cannot withstand
One touch of that magic wand.

Bear through sorrow, wrong, and ruth,
In thy heart the dew of youth,
On thy lips the smile of truth.

O, that dew, like balm, shall steal
Into wounds that cannot heal,
Even as sleep our eyes doth seal;

And that smile, like sunshine, dart
Into many a sunless heart,
For a smile of God thou art.

NIGHT

Many poets have made Night the theme of their verse. In this poem Percy Bysshe Shelley, the author, desires Night's powers of enchantment more than her attribute of rest.

SWIFTLY walk o'er the western wave,
Spirit of Night!
Out of the misty eastern cave,
Where, all the long and lone daylight,
Thou wovest dreams of joy and fear,
Which make thee terrible and dear;
Swift be thy flight!

Wrap thy form in a mantle gray,
Star inwrought!
Blind with thine hair the eyes of Day!
Kiss her until she be wearied out;
Then wander o'er city, and sea, and land,
Touching all with thine opiate wand!
Come long sought!

When I arose and saw the dawn,
I sighed for thee;
When light rode high, and dew was gone,
And noon lay heavy on flower and tree;
And the weary Day turned to his rest,
Lingering like an unloved guest
I sighed for thee.

Thy brother Death came, and cried,
"Wouldst thou me?"
Thy sweet child Sleep, the filmy-eyed,
Murmured like a noon-tide bee—
"Shall I nestle near thy side?
Wouldst thou me?" And I replied—
"No! not thee."

Death will come when thou art dead,
Soon, too soon!
Sleep will come when thou art fled;
Of neither would I ask the boon
I ask of thee, belovèd Night!
Swift be thine approaching flight!
Come soon, soon!

BE PATIENT WITH THE CHILDREN

This little poem is anonymous, but the writer was evidently one who had a wonderful understanding of the little ones.

THEY are such tiny feet,
They have gone such a little way to meet
The years which are required to break
Their steps to evenness, and make
Them go
More sure and slow.

They are such little hands.
Be kind—things are so new, and life but stands
A step beyond the doorway. All round
New day has found
Such tempting things to shine upon; and so
The hands are tempted oft, you know.

They are such fond, clear eyes,
That widen to surprise
At every turn. They are so often held
To sun or showers—showers soon dispelled
By looking in our face.
Love asks, for such, much grace.

They are such frail, frail gifts,
Uncertain as the rifts
Of light that lie along the sky—
They may not be here by-and-by.
Give them not love, but more, above
And harder—patience with the love.

A CRADLE SONG

Isaac Watts, the author of this cradle song, was a famous hymn-writer and theologian who lived from 1674 to 1748.

HUSH! my dear, lie still and slumber;
Holy angels guard thy bed!
Heavenly blessings without number
Gently falling on thy head.

Sleep, my babe; thy food and raiment,
House and home, thy friends provide;
All without thy care or payment:
All thy wants are well supplied.

How much better thou art attended
Than the Son of God could be,
When from heaven he descended,
And became a child like thee!

Soft and easy is thy cradle:
Coarse and hard thy Saviour lay,
When his birthplace was a stable,
And his softest bed was hay.

See the kindly shepherds round him,
Telling wonders from the sky!
Where they sought him, there they found him,
With his Virgin-mother by.

See the lovely babe a-dressing!
Lovely infant, how he smiled!
When he wept, the mother's blessing
Soothed and hushed the holy child.

Lo, he slumbers in his manger,
Where the hornèd oxen fed;
Peace, my darling! here's no danger,
Here's no ox a-near thy bed!

May'st thou live to know and fear him,
Trust and love him all thy days:
Then go dwell for ever near him;
See his face, and sing his praise.

I could give thee thousand kisses,
Hoping what I most desire:
Not a mother's fondest wishes
Can to greater joys aspire.

MY KATE

Elizabeth Barrett Browning, the author, had original genius, a fervent heart, and great power of musical expression.

SHE was not as pretty as women I know;
And yet all your best, made of sunshine and snow,
Drop to shade, melt to nought, in the long trodden ways,
While she's still remembered on warm and cold days—
My Kate.

Her air had a meaning, her movements a grace;
You turned from the fairest to gaze on her face:
And, when you had once seen her forehead and mouth,
You saw as distinctly her soul and her truth—
My Kate.

Such a blue inner light from her eyelids outbroke,
You looked at her silence, and fancied she spoke:
When she did, so peculiar yet soft was the tone,
Though the loudest spoke also you heard her alone—
My Kate.

I doubt if she said to you much that could act
As a thought or suggestion: she did not attract
In the sense of the brilliant or wise; I infer
'Twas her thinking of others made you think of her—
My Kate.

She never found fault with you, never implied
Your wrong by her right; and yet men at her side
Grew nobler, girls purer, as through the whole town
The children were gladder that pulled at her gown—
My Kate.

None knelt at her feet confessed lovers in thrall:
They knelt more to God than they used—that was all.
If you praised her as charming, some asked what you meant;
But the charm of her presence was felt when she went—
My Kate.

The weak and the gentle, the ribald and rude,
She took as she found them, and did them all good;
It always was so with her—see what you have!
She has made the grass greener over her with her grave—
My Kate.

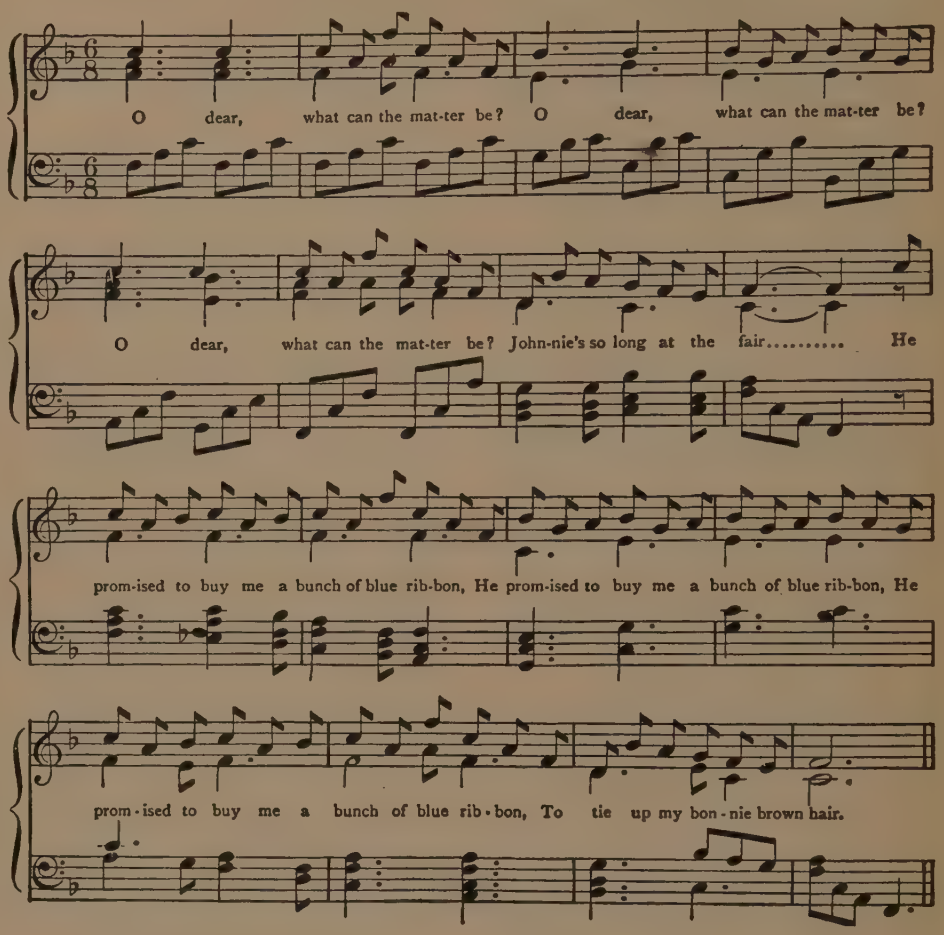
My dear one! when thou wast alive with the rest,
I held thee the sweetest, and loved thee the best;
And now thou art dead, shall I not take thy part,
As thy smiles used to do for thyself, my sweet heart—
My Kate.

LOVE IN TEARS

Coventry Patmore, an English poet of the Victorian age, dwells much in his poems on the power of the spirit of love.

LOVE, won or lost, is countless gain;
. . . . . .
And let us own, the sharpest smart
Which human patience may endure
Pays light for that which leaves the heart
More generous, dignified, and pure.

O DEAR, WHAT CAN THE MATTER BE?


O dear, what can the mat-ter be? O dear, what can the mat-ter be?
O dear, what can the mat-ter be? John-nie's so long at the fair..... He
prom-ised to buy me a bunch of blue rib-bon, He prom-ised to buy me a bunch of blue rib-bon, He
prom-ised to buy me a bunch of blue rib-bon, To tie up my bon-nie brown hair.

O DEAR, what can the matter be?
O dear, what can the matter be?
O dear, what can the matter be?
Johnnie's so long at the fair.

He promised to buy me a bunch of blue ribbon,
He promised to buy me a bunch of blue ribbon,
He promised to buy me a bunch of blue ribbon,
To tie up my bonnie brown hair.

O dear, what can the matter be?
O dear, what can the matter be?
O dear, what can the matter be?
Johnnie's so long at the fair.

He promised to bring me a basket of posies,
A garland of lilies, a garland of roses,
A little straw hat, to set off the blue ribbons
That tie up my bonnie brown hair.

IF bees stay at home,
Rain will soon come.

If they fly away,
Fine will be the day.

THE LITTLE BOOK OF ECONOMICS

WE have looked at the wonder of ourselves and the bodies we inhabit; at ourselves, that is to say, as human beings. We have looked at ourselves also as members of society; that is to say, we have looked into the question of government. One other great thing there is to consider—the whole business of buying and selling and producing things, the science of labor and wealth which we call Economics, from the old Greek word "oikonomia," which meant the "law of the household," and what we are now to do is to try to understand how people get a living, and how the great communities of people called nations prosper by creating and exchanging wealth. Civilization is built up on commerce. Long before the politicians talked of a League of Nations the business men had made one, and the great Business League of Nations has been the foundation of the common prosperity of mankind.

WEALTH AND WHAT IT IS

ECONOMICS is the practical science of wealth. What, then, is wealth? We commonly talk of wealth as meaning riches, the possession of much property, but in economics we use the word without reference to quantity. A poor man is one who has few things, or little wealth, while a rich man is one who has many things, or much wealth.

Wealth consists of all things which satisfy human wants, which can be transferred or exchanged, and which, because they are limited in supply, have value in exchange.

So we see at once that not everything we need and enjoy is wealth in the sense we are considering. Indeed, some things without which life could not go on are not wealth. Without fresh air to breathe we should quickly perish, but as the air is unlimited in supply to all, it is not economic wealth. We do not buy it or sell it, because its abundance is available to all people. So it is with sunlight, another first essential of life; it is not limited in supply, and human work does not produce it. Sunshine, therefore, is not what we mean by economic wealth.

As soon as human work has to be done to make a thing satisfy our needs, the thing becomes wealth. We call it a commodity, an economic good. Things made available by human effort are, unlike air and sunshine, limited in supply and therefore exchangeable as well as useful. So that wealth, the subject of our study, is something limited in supply, transferable, and useful in satisfying human desires. Study this definition carefully.

Sometimes very injurious things are produced and bought and sold. Often goods of inferior quality are made for a poor market. Economics is confined to studying the best means of producing things, the best means of increasing commodities; and it is the business of art and education to see to it that the wealth produced is good in kind, and such as will make people happy, comfortable and cultured. In the same way, when we study engineering we are concerned solely with the making of good machines, and not with the quality of the goods the machines will be employed to make.

A good loom may be employed to weave a poor cloth, but that is not the fault of the loom. So economics, when it deals with producing or exchanging commodities, has to neglect the quality of commodities and treat them all as wealth, leaving it to other arts and sciences to teach that it is all-important to produce and exchange good and useful articles, and not bad and worthless ones.

We have to learn not only to make goods, but how to make goods *good*, and that is a matter calling for knowledge of the effects of the use or abuse of material things by human beings. For example, a material good for one purpose may be bad for another, as a drug may be a medicine in small doses and a poison if taken in quantity.

Economics is not a sordid thing, or to be held in contempt as inferior to the study of the arts or other sciences. It is very important, if the greatest good is to be sought for the greatest number, that we should understand the laws governing the production and distribution of wealth. If we do not understand, we are only too likely to make big mistakes and to bring suffering on many people. Strange as it may seem, it is true that nations have, through lack of understanding of economic principles, made great mistakes in government which have made millions poorer than they need have been. The study of economics, too, is becoming increasingly important because getting a living is becoming more and more complicated and because the relation of occupations to the general welfare is not clear.

THE SERVICES OF OTHERS THAT HELP US TO ENJOY OUR LIVES

Wealth may, and does, consist of *services* as well as of commodities. We require for a comfortable living not only food, clothes, a house to live in, furniture, books, and other solid and material things, but the services of our fellows. These services take many forms, such as the carrying of a letter to a friend, which is done for us by the Post Office, or a ride in the train, which we obtain by the services of railway officials; or the enjoyment of a moving picture or a play, which we obtain from the services of theatres.

Getting a living was very easy to understand in the old days, up to about 150 years ago. Few machines had then been invented, and the things made were for the most part manufactured from beginning to end by individual workers, who, in fashioning a shoe or other article, performed every necessary process. The greater part of trade was local, and people knew what was to become of the food they were raising and of the articles they were making.

Now all that has changed. Many people nowadays do not consume any part of what they make themselves. Millions of workers spend their lives, not in making complete things, but in making parts of things. We cannot too earnestly consider this part of the subject, for its relation to the effective making of wealth is all-important.

As primitive man developed slowly into the social, civilized human being of today, his wants increased with knowledge and he found that he could increasingly satisfy his wants by the *division of labor*.

Among savage peoples—and these still exist in some parts of the world, living exactly as our own forefathers lived thousands of years ago—little sharing-up of work is to be found. The savage directly satisfies his own needs by his own efforts. He hunts, or fishes, and makes for himself the tools or weapons customary to his race.

HOW THE DIVISION OF LABOR HAS HELPED THE WORLD FORWARD

Among the intelligent races of the world there soon sprang up the beginnings of a more complex life. It was found that more wealth could be enjoyed by all if some persons devoted themselves to special jobs and learned to do them more easily. So one man became a blacksmith, another a shepherd, another a maker of bows, another a fashioner of armor. Men came to follow definite and particular trades, and they learned the advantage of exchanging their productions for the productions of others. They obtained the satisfaction of their wants in greater measure by sticking to one trade and calling on other trades to serve them. Thus the division of labor became established in its elementary form.

With the introduction of machinery, which took place in the second half of the eighteenth century, the division of labor became more common, especially in England. Other nations followed later. It became advisable to use machinery in places where there was plenty of coal to heat the boilers in which steam was raised to drive the engines. Coal is so heavy that it is expensive to carry, and therefore it is cheaper to manufacture by coal power near the coal-mines. So those parts of Great Britain which had coal became places where manufacturing was done, while the coalless port engaged in agriculture, and bought iron, cotton and woolens from the manufacturing districts.

THE DIVISION OF TRADES AND INDUSTRIES AMONG TOWNS AND DISTRICTS

Then, again, the damp climate of Lancashire made it an especially favorable place in which to spin cotton, and so Lancashire became the biggest maker of cotton goods, and got a living by exchanging cottons and cotton machinery for food and other goods.

For various reasons other districts specialized in different trades. Birmingham made chiefly brassware, while Sheffield devoted itself to steel, Coventry to bicycles and motors, Bradford to worsteds, Leeds to woolens, Dundee to jute, Belfast to linen, and so on. So we got a *geographical division of labor*, while in each trade there came to be division as between the various parts of an industry. Thus, in Lancashire some towns do spinning and others weaving. The same sort of thing may be found in the United States.

There are industries in which the division of labor is carried so far that one man or woman will for years do nothing more than make a part of a shoe. This often makes tedious work, for a working life in such circumstances is merely the doing of the same little thing over and over again day after day, year after year.

Thinking this matter over, we see that *the division of labor resolves itself into combination in labor, or co-operation.* The savage doing everything for himself is a separate economic unit satisfying his own primitive wants by his own simple means.

THE COMPLEX MACHINE OUT OF WHICH SIMPLICITY COMES

The modern worker, on the other hand, is combined with his fellows in a complicated effort to produce wealth, which wins plenty and simplicity out of its very complexity. As the division of labor becomes more complex the individual task becomes more simple.

Adam Smith, who was the father of modern political economy, and whose great book The Wealth of Nations was published in 1776, described three advantages arising from the division of labor: (1) The increase in dexterity and skill in each particular workman; (2) the saving of time because a workman has no longer to pass from one job to another; (3) the stimulation of the invention of machines to do special things.

As to the first of these, every child has experience. Everyone knows that if we are to become expert in swimming or in playing the piano, we must give much time to it. The constant practice of a particular thing makes it like second nature, and the person devoted solely to one occupation is far more useful than if he tried to do many things.

As to the saving of time in going from one thing to another, if the worker has to make the whole of an article, or to employ different processes and materials, there is necessarily much time wasted in laying down one job and taking up another, and clearing up after one job and preparing for a different kind of work.

THE WONDERFUL INVENTION THAT CAME OUT OF A BOY'S PLAY

To illustrate how the division of labor leads to invention Adam Smith told the following story of the boy who, being sent to open and close the valves of Newcomen's engine, invented an automatic process.

> A boy was constantly employed to open and shut alternately the communication between the boiler and the cylinder, according as the piston either ascended or descended.
>
> One of those boys, who loved a play with his companions, observed that, by tying a string from the handle of the valve which opened this communication to another part of the machine, the valve would open and shut without his assistance, and leave him at liberty to divert himself with his playfellows.
>
> One of the greatest improvements that has been made upon this machine, since it was invented, was in this manner the discovery of a boy who wanted to save his own labor.

Adam Smith is even more right on this point now than when he told this story, for of late years the division of labor has led in great manufacturing establishments, such as those of Henry Ford, who has built twenty-one million motor cars, to the *special production of machines to do the simplest things quickly.* So it is also in the manufacture of shoes, where a very large number of complicated machines each perform one small process.

HOW WORKING HOURS ARE SHORTENED BY DIVISION OF LABOR

While there are thus great advantages in the division of labor, there are also some disadvantages. The chief of these we have already noticed. Work is a great part of life, and when a man has nothing to do for a living but to feed or attend a machine making some simple part, such as punching out pieces of

metal, or fixing eyelets in a shoe, his life is restricted and his powers are narrowed. It is a sort of life which suits some people and does not suit others. The remedy for the monotony is to be found in shorter hours of labor, which enable the individual to find recreation either in sport or in some form of individual work.

Henry Ford holds that doing the same thing all the time suits many people, and quotes the case of a man in his great factory who has nothing to do but pick up a gear with a steel hook, shake it in a vat of oil, and turn it into a basket. Little muscular energy is used because the steel rod is so light. No intelligence is required, for the motion never varies, for the gears come to him in the same place, are given the same number of shakes, and are dropped into the basket, which is always in the same place. Yet the man had been doing this task for eight years and resisted every attempt to make him take up a better one. He saved and invested his money, and is now worth about $50,000. Mr. Ford also states that after careful inquiry he has not found a single case in which a man's mind has been deadened by repetition work. Many people, however, think him wrong.

THE PRIMITIVE PEOPLES WHO SUFFER MOST IN HARD TIMES

It has sometimes been urged that the division of labor makes trade so complicated that in hard times, or change of fashion, a worker in industry may suffer with undue severity. As a matter of fact, however, the severest sufferings endured by an industrial community are not so great as those in an elementary agricultural community in times of distress. The great famines of the world come, not to complex working communities, but to more primitive peoples, such as those of China or India or Russia.

There is a division of labor not only between persons, between trades and between districts, but also between nations.

This arises for exactly those reasons which cause different trades within a country to be carried on in different parts of it. Countries, either because of their possession of certain natural resources, or because of climate, or because of special aptitudes in their people, are found to be in a marked degree successful in some particular industries.

This is a very important factor in the wealth of nations. We must not suppose that it is entirely the fault of a country if it is rich or poor. It is as stupid to despise a poor country as to despise a poor man. The same nation has at different times in history experienced poverty and riches.

Britain was a comparatively poor country, and had apparently poor prospects in the middle of the eighteenth century, but was comparatively rich and prosperous a century later. Venice, which was for centuries a powerful world state, is now a city mainly visited for its art treasures.

WHY VENICE LOST HER GREATNESS AND WHY BRITAIN ROSE TO POWER

These changes are by no means to be attributed solely to human frailty or error; they have largely followed from economic causes. Venice lost her wealth when, through geographical discoveries, she ceased to be the main gateway for the riches of the East. Britain rose from comparative poverty to comparative riches through the discovery of the use of coal. The United States has become rich largely because of its immense natural resources.

Before we leave the meaning of wealth, let us once more remind ourselves of the relation of wealth to life.

The word wealth has a most interesting origin. The Anglo-Saxon word *wela* meant "well-being" (weal), and was changed later into the Middle English *welthe,* which afterward became our modern word *wealth.* So, while the science of economics usually relates to the study of wealth as commodities which have value in exchange, whatever their purpose, or whether they are good or bad, we must always accompany our economic studies with the consideration of wealth as *making or unmaking human happiness.*

JOHN RUSKIN'S IDEA THAT ONLY LIFE IS WEALTH

It was with such thoughts in his mind that John Ruskin wrote, in 1862:

> There is no wealth but life, life including all its powers of love, of joy, and of admiration. That country is richest which nourishes the greatest number of noble and happy human beings; that man is richest who, having perfected the functions of his own life to the utmost, has also the widest helpful influence, both personal and by means of his possessions, over the lives of others.

THE NEXT STORY OF OUR OWN LIFE IS ON PAGE 5357.

John Colet.

Pestalozzi.

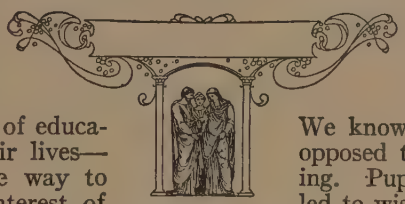
Comenius.

Joseph Lancaster.

Erasmus.

Froebel.

THE MEN WHO GAVE US SCHOOLS



HERE we come to a group of men, belonging to all times and all places, who made some form of education the work of their lives—the men who led the way to schools. No other interest of mankind has enlisted a more varied array of enthusiasts than this subject of educating the people.

If we go back in time to the great days when European civilization arose around the Mediterranean, and in Greece and Rome men had their minds and characters often finely molded, we shall find that whenever education is mentioned, one name—that of Marcus Quintilian—stands out. Quintilian, a son of Roman parents, was born in Spain about the time when Jesus was crucified at Jerusalem.

In that time of the early Roman Empire education was supposed to centre around oratory. Quintilian, who had been educated in Rome, went back to Spain to practice oratory, and on returning to Rome he set up a famous school. Afterward he retired to write a book on oratory and to train two nephews of the emperor Domitian, who were brought up to be the emperor's successors. This old book has been preserved, and through it we know exactly what this famous teacher thought about education. And we know what Quintilian himself was like, for his book reflects his character. We know that he was entirely opposed to harshness in teaching. Pupils, he said, should be led to wish to learn, not forced to learn. To be an orator, as Quintilian understood oratory, no man could know too much, for all information may be useful to the public speaker; and, best of all, he held that only a just and honorable man could be effective as an orator, because character would shine forth in speech. Further, one of the greatest aims of sound education was to make men just and honorable.

So the educator of nearly two thousand years ago was in every way a pleasing man to know. He was earnest and industrious, respected, successful and honored, but wholly unspoiled, and he knew the need for being tolerant toward everyone who honestly differs with us.

The next educator that stands out in history was born in A.D. 735, six hundred years and more after Quintilian died. The world had had a rough passage through those years, brightened only by the growing influence of Christianity.

Centuries of warfare had made men forget the learning the Roman Empire

had valued, but Charlemagne, who knew well the value of scholarship, sought to spread it, though in his day the use of the sword was far better understood than the use of the pen.

Looking around for someone to take charge of his ideas, he saw that the most energetic teacher was an Englishman, the Master Scholar of the famous school attached to York Cathedral. His English name was Ealhwine, or, as we should say now, Ailwyn; but it was Latinized into Alcuin, and so he remains known to us.

THE JOURNEYS OF A YORK BOY IN SEARCH OF BOOKS

Alcuin was a York boy, educated at the cloister school, and became its best scholar, accompanying the headmaster Ethelbert on his journeys to find learned books. After Ethelbert was made Archbishop of York Alcuin became head of the school, which then was famous throughout Europe. Traveling to Rome, Alcuin met Charlemagne in Italy in 781, and went with him to set up a school at Aix-la-Chapelle in connection with the court.

Charlemagne and his family set the fashion of valuing learning by going to school more or less, and Alcuin was honored and enriched. But after fifteen years at the court, of which two were spent holidaying in England and arranging a peace between Charlemagne and Offa, king of mid-England (Mercia), he asked leave to go to a quieter place than Aix-la-Chapelle. Tours was the place, and he was made its abbot. It had been the most famous school in France, but had declined. Though he lived there only eight years before his death, in 804, Alcuin revived its glory.

He left behind him a great deal of writing, useful for teaching but not choice enough to be literature. His most interesting remains are 232 letters giving us pictures of how men lived in those days. Some of them were written to Charlemagne, some to friends in England, and some to a pupil in Salzburg.

AN ENGLISH SCHOOLMASTER OF ELEVEN HUNDRED YEARS AGO

This Englishman, who was by far the greatest schoolmaster in Europe in the year 800, was a man of great energy and force of character, rather than a scholarly recluse. It was better so, for what the world then needed was that learning should once more be made to catch the attention of men of action.

But the beginnings of learning in Western Europe, which are associated with the name of Alcuin, did not reach their true fruition until seven hundred years after that great teacher's death. It was Desiderius Erasmus, a Dutchman of Rotterdam, born in 1466 and living till 1536, who was the first free international European scholar to live solely for learning. He won the respect of all broad-minded men, used his pen as incessantly as he liked, and managed to escape martyrdom. He is the finest example of the scholar triumphant.

From his boyhood Erasmus devoted himself to learning, and in order to have quiet and leisure for the study of ancient languages he became a priest in a monastic brotherhood. At twenty-eight he escaped into the world by becoming secretary to a bishop, who allowed him to continue his studies in Paris on a small pension. An English friend also gave him a small life-pension and invited him to England, where he began the study of Greek and formed a close friendship with John Colet and Sir Thomas More, two of the splendid Englishmen of that stirring time.

ERASMUS TRAVELED THROUGH EUROPE SPREADING KNOWLEDGE

Colet persuaded him that the best use to which he could put the learning he was diligently acquiring was to master Greek, so that he could produce a Greek edition of the New Testament, which had hitherto been available only in a Latin translation. And for fifteen years he roamed through Europe, France, Belgium, England, Italy, Holland and Germany, gathering knowledge, teaching, writing books, and gaining everywhere the reputation of a fine scholar.

Finally he settled down at Basle editing classical books, especially the works of the early Christians, such as Jerome, Ambrose, Augustine, Chrysostom and Origen. His reputation as a scholar was immense and universal. It was not that his scholarship was particularly exact, but his style was so free and easy that he was read where more accurate writers were dull. All his life Erasmus was physically frail, but with great care he lived to his seventieth year.

The supreme feature of his character was that he had the simple, truthful, student's temperament which seeks learning steadily and calmly and will not be turned

THE UNIVERSAL DUTCHMAN

Erasmus, the Dutchman with the universal mind, with a gathering of scholars at Basle.
From the painting by Felix Cogan.

Erasmus teaching the young emperor Charles V.

Young Erasmus among the books he loved.

aside by passion or violence. He lived at a time when religious conflict was fierce and when learning was eagerly enlisted on opposite sides, Protestant and Catholic. Learning itself was hated by those who feared it would unsettle men's minds by stimulating thought and overturning old beliefs; but Erasmus pursued his own course, declining to ally himself with any form of unjust violence.

THE GREAT MAN WHO WENT THROUGH LIFE SEEKING SIMPLE TRUTH

Both sides accused him of being against them because he would not declare himself for them. Meantime he twitted them with a sly and gentle raillery for their bitterness and admitted that each was right where they were justly right, and did not damage their cause by violence. He satisfied neither side because he would not assent to their unjust views. In short, he was a broad-minded man, keenly sensitive to the follies of unjust passion, and always ready to subject it to a quiet exposure.

And because the average man is not a bitter partisan, but sees the moderate common-sense view, Erasmus always had a host of generous friends who appreciated his unswerving steadiness and admired the neatness of his rebukes of the hot-heads. No one exposed real abuses more effectively than he, in his quiet, humorous way. He lived and died a member of the Catholic Church, but it was said of him that he laid the egg which Luther hatched, though no one was a more severe critic of some of Luther's views and doings. Erasmus stands in history as the type of the earnest student and true educator, a searcher after simple truth undisturbed by the passions of partisanship.

JOHN COLET AND THE FAMOUS SCHOOL HE FOUNDED IN LONDON

John Colet, the English friend of Erasmus, was a notable friend of education, for he generously founded one of the most useful and distinguished of English public schools and made its government secure against some of the evils which have been associated with educational institutions.

Colet's father was a wealthy man, twice lord mayor of London. After studying at Oxford he devoted himself earnestly to learning by study abroad. Then he began to lecture in Latin on the Scriptures at Oxford, with a freshness which attracted large audiences; and later, as Dean of St. Paul's, he repeated his popularity as a preacher in London.

Colet stands forth with honorable distinction as a reformer who lived up to the ideal he placed before the clergy. He resigned preferments which had been granted him in his youth, and brightened and popularized the services at St. Paul's; and when his father died and left him rich he proceeded to spend his inherited money for the public good.

To this end he founded in 1509 a school in St. Paul's Churchyard for 153 boys, and superintended the production of suitable school-books. The management of the school, which was dedicated to the Child Jesus, he placed in public hands by committing it to the Mercers' Company.

As a preacher his teachings were splendidly courageous. When a convocation was assembled to suppress the Lollard heresy he was appointed to preach, but he used the occasion to denounce corruption in the Church and to demand its reform, while the Lollards listened to him unmolested. His enemies retorted with charges of heresy against himself, and, among other accusations, called on him to answer for the use of English in his services—charges that were set aside as frivolous and unworthy.

THE MAN WHO WAS NEVER AFRAID TO SPEAK THE TRUTH

He did not hesitate to denounce Henry VIII for going to war, and when summoned to meet the king, he boldly defended the position he had taken, whereupon Henry, in admiration of his frankness, made him one of his chaplains. When Wolsey was installed as Cardinal in Westminster Abbey, and Colet was the preacher, he used the occasion to give the new cardinal a much-needed warning to beware of worldly ambition.

As his wealth failed he busied himself with drawing up statutes for the government of St. Paul's School, providing that it should not fall under narrow and priestly management and that the active governors under the Mercers' Company should be "married citizens"—an obvious attempt to keep the school in close touch with family life and practical business.

Colet left St. Paul's School on a firm foundation, and he left a singularly high reputation, which extended over Europe. His personality evidently made a deep impression on all who knew him, and his friends were the men best worth knowing

A DAME'S SCHOOL—BY THOMAS WEBSTER

in his day. His courage and generosity were unfailing. He never shirked speaking what he felt to be the truth, though at that time safety was to be found most easily by running with the crowd. Like Erasmus, to whom he paid a yearly pension in order that he might work unfettered, he had an independent mind, and gave the world an example of the character that education should produce.

THE JESUITS AND THEIR SYSTEM OF EDUCATION

In the sixteenth century also was begun a system of education which has come down to the present day. In 1540 Ignatius of Loyola, of whom we read on page 4869, with Francis Xavier and other associates founded a religious order called the Society of Jesus. The members of this order were called Jesuits, and one of their great objects was the education of boys and young men. A *Ratio Studiorum,* or course of study, was planned and tested for five years in Jesuit colleges throughout Europe. It proved so successful that it was adopted as the system to be used henceforth by all Jesuit schools and colleges. The system divided teaching into three parts. First and lowest were the humanities, which included modern languages, the classics, history, and so on. The second, or arts division, took in philosophy, mathematics and the natural sciences. The third division was taken up with the study of theology. The Jesuits have always been noted for their teaching of Latin and Greek, and their method of instruction brought their

A VILLAGE SCHOOL—BY SIR DAVID WILKIE

pupils to a speaking knowledge of the language studied. Early in the nineteenth century the *Ratio Studiorum* was revised, and much more attention was paid to natural sciences.

Three men stand out in the history of education for the remarkable enthusiasm with which they sought to understand the principles on which education is based. They were John Amos Komensky (the Moravian commonly called Comenius), the Swiss John Henry Pestalozzi, and Frederick Froebel, a German born in the Thuringian Forest.

Comenius lived from 1592 to 1671. He was one of the genuine heroes of his day. Born a Protestant Moravian, he traveled in Holland and England after being educated in Germany. He was struck with the absurdity of the methods of teaching. It seemed to him, and the observation was true, that education had become merely a matter of words and was not made practical by constant association of words with the things they represent. Thus, languages were taught out of a book, whereas he contended that they should be taught by the tongue, used in speech about the things around us, and enlivened by a natural interest in life. He would blend the teaching of languages with a knowledge of practical crafts and arts, and would use pictures so that the eye might help the mind where things talked of were not present.

THE MORAVIAN PASTOR WHO MADE THE FIRST PICTURE-BOOK FOR CHILDREN

When he became a pastor and teacher he not only carried out his system but wrote a book describing it, which he called The Gate of Tongues Unlocked. Later he used pictures and made the first picture-book for children. In his books he placed sentences in the language the children knew, and opposite them the same sentences in the language to be learned—much as we do in the French lessons in this book—so that from the first the words were seen, not in dry lists, but as actually used in conversation.

His books made such a sensation that they were reproduced in fifteen languages, and Comenius was invited both by the Government of Sweden and the Parliament of England to assist in the reform of education in those lands. When he reached England he found the country so disturbed by the approach of the Civil War in the reign of Charles Stuart that he went on to Sweden, where he was warmly welcomed and awarded a pension for his services.

This great and good man, whose sole aim was to spread knowledge and goodness in a spirit of delight, was driven from pillar to post by violent religious persecution. Chased out by his native land into Poland, he was given no rest, and finally, escaping only with his life, he saw the manuscripts containing almost the whole work of a laborious lifetime burned with all his household possessions. It was in freedom-loving Holland that he died, in Amsterdam, in 1671.

Comenius was a bishop of the Church of the Moravian Brethren, and his name is held in reverence to this day by that community, and with something like the same feeling by all who know the story of the evolution of wise ideas of education. He should also have the gratitude of all children, for he was the first educator who tried to make learning easy for them.

Jean Jacques Rousseau, of whom we read on page 2128, was the inspiring figure in education during the eighteenth century. In 1762 he published a book called Emile. In this book he claimed that a child ought to be educated according to nature, which included the child's own nature as well as the world of things. Rousseau said that it was only the practical education which came from things that was entirely good. Geography, nature study, number work, and manual occupations were more suited to the child than were literature and languages, so Rousseau thought. Indeed, Rousseau may be called the "father of modern education," for it was he who first claimed that education should start from the child's own interests and activities.

PESTALOZZI AND HIS FINE IDEAS AND BEAUTIFUL AIMS

John Henry Pestalozzi, the Swiss educator, was one of the famous teachers who were inspired by what Rousseau had written. As a boy he was regarded by his schoolfellows as a kind of good-natured oddity, and a part of that feeling followed him throughout his life, in spite of his goodness and enthusiasm. He had fine ideas and beautiful aims and instincts, but he was so thoroughly unbusinesslike that he was bound to fail sooner or later. Yet he passed on his enthusiasm to others, and left men thinking of him with gratitude and loving pity.

As a student he thought that the principles of education had never been fully thought out and put simply into practice, and he felt that he was the man to do it. But before that time came he had experimented in other ways of living, with the purpose of improving the lot of the poor people.

THE INFLUENCE OF A GOOD WOMAN

First he thought of being a minister and then of being a lawyer, but finally he married and became a farmer on borrowed money—and failed. At twenty-nine he turned his farmhouse into a school, collected twenty poor children, clothed and fed and lodged them, and taught them while they worked.

John Colet's statue outside St. Paul's School, London.

It was the first industrial school. He spent his wife's small fortune on this experiment, which attracted considerable attention, but at last ended in failure. He now began to write, and his Leonard and Gertrude, a book which showed how great an influence a good woman could wield, became widely popular and spread his fame to other lands. When the French invaded Switzerland in 1798, and many children were left homeless, he started a school and home for them at Stanz, with a success which drew public attention to it, and in 1801 he published his views of education in the book How Gertrude Teaches Her Children. His great aim was to develop all the faculties of a child through the exercise of its senses.

Pestalozzi with two of his pupils.

Pestalozzi carried on his educational work at various centres in Switzerland, which were visited by many people from all over Europe; but he had not the power to sustain an enterprise over a long period, and when he died, at the age of eighty-two, it was with a sense of having partly failed in his more ambitious schemes.

His power was largely in his lovable character, his enthusiasm and his sympathy with the children he educated. His failure was in his lack of business insight. But he succeeded in concentrating attention on education and impressing thoughtful people with a deep sense of its importance and urgency.

One of the young men he inspired to think out new education methods was Frederick Froebel. His studies have had more definite and enduring effect than those of his master, for they were more cleverly made into a practical system.

Friedrich Wilhelm August Froebel, born in 1782 in the Thuringian Forest, in Germany, was the son of a minister. His mother died when he was a baby, and the child was neglected during his early years. His lonely wanderings in the forest made him thoughtful. The man who in later life was to teach that the very early years of our lives should be passed in pleasing activities, well chosen to look like play, had quite a different early life himself. He was neglected and lonely, and was regarded as dull; but in those early years he was learning how to think and was educating himself for his life-work.

At first he was apprenticed to a forester, but later he made his way to the University of Jena and eventually became a teacher. As a private teacher of three boys he took them to Pestalozzi's school at Yverdun, in Switzerland, to study his method of progressive teaching. Though he and his boys were immensely impressed by Pestalozzi's enthusiasm, he saw that the plan

adopted was not well thought out, and he set himself the task of producing a more clearly defined system. Froebel was a man with a theory to work out, but he was also much more practical than Pestalozzi. Pestalozzi had taken care of the orphan children made by Napoleon's wars; Froebel started a stage farther back, and after he had begun his educational studies he became a soldier in the Prussian army, fighting to stop Napoleon's orphan-making career.

While in the army he met and enlisted the sympathy of two other young men, who joined him as educators when their soldiering was over. Out of his educative experiments Froebel gradually developed his idea of teaching quite young children on the system now known as the kindergarten. That was the name he used and popularized for a school he started in the Thuringian Forest of his boyhood; he called it the "Garden of Children." There, like growing plants in a garden, the children were, as he said, to be "cultivated according to the laws of their own being, of God and of nature."

FROEBEL'S FINE PLAN FOR STARTING ON THE ROAD TO EDUCATION

His particular method was to train the children by their own activity as expressed in a sort of play. So he thought out and designed a whole succession of activities which he believed would be a gradually growing education pleasant to the child.

And now Frederick Froebel's system, more or less modified by the experience of other teachers, is in use in tens of thousands of schools for young children throughout the world. He did not plan, as he once thought he might, a whole system of education which would serve man on his continuous advance from infancy to manhood; but he did conceive a scheme for giving the child an easy start on the unending road of education.

The educators we have looked at —Comenius, Pestalozzi and Froebel— aimed at founding systems of teaching which would last because they were based on firm principles. Now we shall glance at three or four who started methods useful in their day and led to the formation of societies for carrying them on.

THE NEW SYSTEM TWO MEN STARTED UNKNOWN TO ONE ANOTHER

Joseph Lancaster and Andrew Bell were two such men. They began separately what was called the Monitorial System. It set children to teach children. Andrew Bell began it when he was an army chaplain in India. He observed how Indian children teach each other in their open-air schools, and as he had charge of a military orphan school in Madras, and could not have grown-up teachers there, he adopted the plan of teaching certain things to the older children in the morning and setting them to teach the same things to the younger children in the afternoon while the knowledge he had imparted was fresh in their minds.

Meanwhile in the south of London Joseph Lancaster had begun to use the same system, which he had thought of independently. He was the son of a Chelsea pensioner and became a teacher at sixteen. He loved teaching, for which he had a natural gift. His first school assembled in his father's house. There was a great demand for education, and Lancaster succeeded so well that he soon had a large school taught by himself and the older children in the Borough Road, Southwark.

His success was so conspicuous that some well-to-do members of the Society of Friends gathered about him, for he was a Friend himself, and established a Society which they called the British and Foreign School Society, for establishing similar schools all over the country. To provide teachers for these schools a training college for teachers was started, and as the supply of teachers grew, new schools were built in many towns.

HORACE MANN AND FREE PUBLIC SCHOOLS

In the United States the name of Horace Mann is perhaps the most famous among educators. Mann was born in Massachusetts at the end of the eighteenth century. He received an excellent education, took a degree and was admitted to the bar of his state. Then he was elected to the legislature. It was through his advice that a board of education was appointed to reorganize the common-school system of the state. The movement begun by Mann in Massachusetts spread to the rest of the Union and led to the development of the free-public-school system. It was through Horace Mann, also, that the first normal school was established in the United States. His last great educational effort was made to encourage co-education in schools and colleges.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5381.

MISS DOLLIE AND CAPTAIN BLUE

BABS was a pretty little girl, with blue eyes and dark hair, but she had a great fault. She was very willful, and when she did not have things all her own way she became bad-tempered.

One night she was sent to bed early for quarreling with her brother Ronnie. For some time she lay quiet and still, cuddling her beautiful doll; and then, with another outburst of temper, she took poor Miss Dollie and gave her a severe beating.

"I don't love you any more," said Babs to Miss Dollie. "In fact, I don't love anybody!"

Rising up in bed, she flung her doll right across the room, and then snuggled down between the sheets and fell asleep.

Poor Miss Dollie fell face downward in the corner of the room and broke her nose. As she was a very sweet-tempered doll, she did not utter a word of complaint, but remained in the place where she had fallen. Half an hour later nurse came and put Ronnie to bed; and, after vainly calling twice to his sleeping sister, the little boy also fell asleep.

"How unhappy I am!" said Miss Dollie, when she saw that the two children were sleeping and she could talk without danger. "How unhappy I am! Just because I seldom speak, because I never eat much, and never break anything, and never cry, people imagine that I can't think, see and feel. They are mistaken."

"They are indeed mistaken, Miss Dollie!" exclaimed Captain Blue, a very fine and handsome tin soldier, whom little Ronnie earlier in the morning had thrown into the same corner where Babs had flung her doll.

"Children fancy that, as we don't cry out when they hurt us, we never suffer. But we do suffer," he said, with a deep sigh. "Just look at my poor head! Ronnie has almost twisted it right off my shoulders."

"And just look at my nose!" said Miss Dollie. "Babs has broken it clean off. Is it worth while having real golden hair, and well-painted red cheeks, and blue eyes that open and shut, when one is ill-treated like this?"

"I am indeed very sorry for you, Miss Dollie," said Captain Blue; "but, alas! I cannot comfort you. I can no more glue your nose on than you can put my head straight. Toys we are—ill-treated toys—and toys we shall remain for ever and ever."

"No, no!" said the doll, in a strange and mysterious voice. "I certainly shall not remain a toy forever, and neither, I hope, will you." Then, seeing that the tin soldier was now very curious, she added: "Would you like to hear the story of my life?"

"I dearly love to hear stories, Miss Dollie," said Captain Blue, "especially when they are true stories."

"Mine is a very true story," said

the doll sadly. "My dear Captain Blue, I dare say you will scarcely believe it, but I was not always a thing with a china face and a china body, and eyes that open and shut. Not very long ago I was a pretty little girl, and I lived in a beautiful house, and had more toys than I could play with. Unhappily, I was, like Babs, a very naughty girl, and at last I became a nuisance to everybody around me. One evening, when I had been sent to bed for poking my dollie's face into the fire, a fairy came into the nursery and changed me into a doll. 'A doll you shall remain,' she said, with a terrible look, 'until a little girl as naughty as you has inflicted on you the suffering that you have inflicted on others. And you shall not be restored to your proper shape,' the fairy went on, 'until this naughty little girl herself becomes a good little girl.'"

WHEN I HAD BEEN SENT TO BED, A FAIRY CAME AND CHANGED ME INTO A DOLL

"Well," said Captain Blue, glancing in pity at her broken nose, "I should say that the first part of your punishment is over."

"Yes," said Miss Dollie, "Babs is certainly as naughty as I ever was. But will she ever become a good little girl? I am afraid that the fairy will come and change her also into a doll. I dare say you know, Captain Blue, that all dolls are little girls who have been transformed because they became very, very naughty?"

"No," said Captain Blue, "I did not know that. But perhaps, Miss Dollie," he added, in a strange whisper, "you may not be aware of the fact that all toy soldiers are really little boys who have been transformed by an old wise magician. I was an exceedingly wicked little boy. I used to rush about the house with my wooden sword, knocking down everything in my way. I broke my mother's flower-vases and upset my daddy's ink-well. So I was changed into a toy soldier, and I shall not be delivered from the spell until the naughty boy to whom I belong becomes a good boy. But I am beginning to despair of Ronnie. You see in me, Miss Dollie, the only survivor of a great army. Yes, I had forty-eight men under my command this morning, but Ronnie has already broken off all their heads, and he flung me into this corner because mine would not come off easily. It was this that made me say: 'Toys we are—ill-treated toys—and toys we shall remain forever!'"

"For my part, as I have said," exclaimed Miss Dollie, "I still hope for better things. Have you not noticed how troubled the sleep of Babs has been since we began to talk? I am certain she has heard all we have said, for she is only in a sort of half-sleep. Of course, it seems to her just a dream; but she will remember it in the morning, and perhaps she will become a good girl, and get Ronnie to be a good boy."

And that is what happened. As soon as Babs woke up the next morning she climbed on Ronnie's bed and told him her wonderful dream. Both the children resolved to be very good for the sake of the doll and the tin soldier; and when, a few days afterward, their delighted mother took their broken toys away and replaced them with new ones, they knew that Miss Dollie and Captain Blue had at last been changed back into a little girl and little boy.

THE MARCH OF THE TEN THOUSAND

OF all the successful struggles against overwhelming odds that history relates, few can compare with the great march known as "The Retreat of the Ten Thousand." Famous in ancient times as a wonderful military achievement, it remains to this day a stirring record of courage and endurance.

In 401 B.C. Cyrus, son of Darius, made war against his brother Artaxerxes, who had succeeded to the throne of Persia. By various pretexts and deceptions he secured the services of about thirteen thousand Greeks, who marched with the rest of his army into Asia. At Cunaxa, near Babylon, Cyrus was defeated and slain, and the Greeks found themselves alone in the heart of a hostile continent. They endeavored to come to an agreement with Tissaphernes, the victorious general, to allow them to return safely. Tissaphernes met them with fair words; but when he had won their confidence he invited their leaders to a magnificent banquet and treacherously slew all who came.

We may picture the plight of the unfortunate Greek army, deprived of many of their leaders, thousands of miles from home and kindred, and surrounded on all sides by hostile forces. It was impossible for them to push on into the unknown country; it was impossible for them to remain where they were. There was nothing for them but retreat, and retreat involved a long and terrible march through rough lands peopled by savage races. For the moment they were in the depths of despair.

In this perilous moment, when all seemed lost, a leader was found—a man who had joined the army as a simple volunteer for love of adventure. As the soldiers lay about listless and dejected, Xenophon, an Athenian knight, asked himself: "Why do I lie here? The night is creeping on. The morning will probably bring the enemy, and defeat will be followed by insults, torture and death. Am I to wait and do nothing until some officer comes forward to give counsel and to act? To whom am I to look for this; and am I not old enough for the task?"

He arose and summoned the captains. To them he explained the danger of their position, and showed them that their only hope lay in their weapons and right arms. He himself, he said, was willing either to follow or to lead. His eloquence won them over. They acclaimed him as their leader, and at once preparations were made for the retreat.

The wonderful march began. All the baggage that could be spared was burned, in order to leave as many soldiers as possible ready for action. Their course was marked out for them—they could only strive to reach the coast. They crossed a broad river, and encountered the first attack of the enemy. Slingers and mounted bowmen, whose weapons carried farther than those of the Greeks, hung on their rear and flanks and harassed them. Xenophon tried to repel the attack, but was defeated with great loss. To restore the spirit of his men the leader took the blame of the defeat on himself and reorganized his forces.

The Greeks marched on. Soon they came to a country which presented enormous difficulties to their retreat. Their hearts sank as they saw the terrible rocks and narrow ravines of a land inhabited by a fierce fighting race of hillmen. Had they once been caught in the narrow passes of this country, they would have been overwhelmed. They could escape destruction only by moving with almost incredible swiftness from height to height before the enemy could reach them.

Day after day they made their gallant marches till wild Armenia stretched before them. This country was swept by great winds and heavy snows, making it almost impassable. Moreover, the Greeks were crossing it at the most terrible season of the year—the winter.

Buffeted by tempests, drenched and blinded by raging snows, they struggled along. Their wonderful spirit urged them on; and not only did they repel the attacks of their foes, but they assumed the offensive, stormed the camp of the ruler of the province, and carried away much booty.

Then they crossed the Euphrates near its source, and encountered a wind of piercing coldness, while they forced their way with dogged persistence through snow six feet deep. On they pressed, hampered by many sick and wounded soldiers. Behind them were the enemy, ready to fall upon them at any moment. A feigned attack drove these away, and the Greeks began to approach the plains.

THERE IN THE DISTANCE LAY BEFORE THEIR GAZE THE BLUE WATERS OF THE EUXINE SEA

Their way was now impeded by a river, which they crossed, only to find that the pass leading to the open country beyond was blocked by the tribesmen of the district. Although hampered by their ignorance of the country, and fighting in the darkness of night, they carried the pass and emerged victorious into the plain.

Another river lay in their path. They crossed it, and neared a large town, the inhabitants of which sent a guide to direct them. For five days they followed the guide, and then they saw before them Mount Theches. The tired and sorely tried warriors climbed painfully to its summit, and there in the distance lay before their gaze the blue water of the Euxine Sea, which we now call the Black Sea.

The pent-up emotion of the long march burst forth, and the men, crying "The sea! The sea!" threw themselves into one another's arms. Then, with a sudden impulse, they set themselves to gather stones; and where they first gazed upon the sea they raised a mighty monument. The remnant of the ten thousand had forced their way to safety!

Even now their troubles were not ended. They had reached the sea, but transports could not be found for all of them, and the fearful prospect of being compelled to march along the shores of the Black Sea made them discontented and almost mutinous. The sick men and those men over forty years of age were taken on ships, while the rest of the army marched to the nearest port.

Here a review was held, and it was found that about six thousand men still survived. About three thousand men had been lost at Cunaxa, and nearly four thousand on the grim march. This number was small indeed when the terrible forced marches they had undergone and the dread regions they had passed through are considered.

Their fame spread from one Greek city to another. Their exploit left a wonderful impression on the Greek world, and although their monument of stones at Mount Theches has long been leveled to the dust, the memory of the gallant and laborious march lives wherever bravery and courage are honored.

It is well that the human race has such memories, for they are shining inspirations. Many a boy who read this story in school had to face fearful odds in the World War and was inspired and cheered by the courageous tale.

PANDORA

THE STORY OF THE MAGIC BOX

Drawing by Phyllis Chase.

LONG, long ago, according to the Greek story, when the world was very young, the gods lived upon Olympus, and Zeus (Jupiter) ruled both gods and men.

Before man was created, so runs the story, a giant race of Titans inhabited the earth. Two of these Titans, who were brothers, were named Prometheus and Epimetheus. You have perhaps heard or read how Prometheus stole fire from heaven to give to man, and that with this gift man was able to rule all the animals, to make weapons and tools, and become the most powerful of living beings.

Jupiter was very angry because of this theft, and in order to punish Prometheus and his brother he made the first woman, with the help of all the gods, who each bestowed upon her some gift or grace, and gave her to Epimetheus. She was called Pandora, but Pandora also received gifts not so lovely. She had a naughty heart and far too much curiosity. When Jupiter sent her to Epimetheus, Mercury went before her and left at the door, perhaps as a wedding gift, a box, very beautifully carved and fastened with a gold cord cunningly twisted with many ins and outs. This box Epimetheus forbade Pandora to open until Mercury should give them permission.

In the absence of Epimetheus, Pandora could not resist the desire to take a peep into this wonderful box. She untwisted the golden cord and lifted the lid. Immediately the evils which have plagued mankind ever since that day escaped, before Pandora could replace the lid—all but Hope, which lay at the bottom of the box. Hope is one of the greatest of our blessings, for no matter what evil may befall us, it can be borne if only Hope is left in the heart.

There is another story which says that the magic box was filled with blessings which were intended to make man happy and wise when Pandora opened the box. But surely Hope would be more likely to be included in a box of blessings. Everyone can make up his mind for himself about this.

THE REMARKABLE ROCKET

By Oscar Wilde

THE King's son was going to be married, so there were general rejoicings. He had waited a whole year for his bride, and at last she had arrived. She was a Russian Princess, and had driven all the way from Finland in a sledge drawn by six reindeer. The sledge was shaped like a great golden swan, and between the swan's wings lay the little Princess herself. Her long ermine cloak reached right down to her feet, on her head was a tiny cap of silver tissue, and she was as pale as the Snow Palace in which she had always lived. So pale was she that as she drove through the streets all the people wondered. "She is like a white rose!" they cried, and they threw down flowers on her from the balconies.

At the gate of the castle the Prince was waiting to receive her. He had dreamy violet eyes, and his hair was like fine gold. When he saw her he sank upon one knee, and kissed her hand.

"Your picture was beautiful," he murmured, "but you are more beautiful than your picture"; and the little Princess blushed.

"She was like a white rose before," said a young page to his neighbour, "but she is like a red rose now"; and the whole court was delighted.

For the next three days everybody went about saying: "White rose, Red rose, Red rose, White rose"; and the King gave orders that the page's salary was to be doubled. As he received no salary at all this was not of much use to him, but it was considered a great honour, and was duly published in the Court Gazette.

When the three days were over the marriage was celebrated. It was a magnificent ceremony, and the bride and bridegroom walked hand in hand under a canopy of purple velvet embroidered with little pearls. Then there was a state banquet, which lasted for five hours. The Prince and Princess sat at the top of the great hall and drank out of a cup of clear crystal. Only true lovers could drink out of this cup, for if false lips touched it, it grew grey and dull and cloudy.

"It is quite clear that they love each other," said the little page, "as clear as crystal!" and the King doubled his salary a second time. "What an honour!" cried all the courtiers.

After the banquet there was to be a ball. The bride and bridegroom were to dance the rose-dance together, and the King had promised to play the flute. He played very badly, but no one had ever dared to tell him so, because he was the King. Indeed, he knew only two airs, and was never quite certain which one he was playing; but it made no matter, for, whatever he did, everybody cried out: "Charming! charming!"

The last item on the programme was a grand display of fireworks, to be let off exactly at midnight. The little Princess had never seen a firework in her life, so the King had given orders that the Royal Pyrotechnist should be in attendance on the day of her marriage.

"What are fireworks like?" she had asked the Prince, one morning, as she was walking on the terrace.

"They are like the *aurora borealis*," said the King, who always answered questions that were addressed to other people, "only much more natural. I prefer them to stars myself, as you always know when they are going to appear, and they are as delightful as my own flute-playing. You must certainly see them."

So at the end of the King's garden a great stand had been set up, and as soon as the Royal Pyrotechnist had put everything in its proper place, the fireworks began to talk to each other.

"The world is certainly very beautiful," cried a little Squib. "Just look at those yellow tulips. Why! if they were real crackers they could not be lovelier. I am very glad I have traveled. Travel improves the mind wonderfully, and does away with all one's prejudices."

"The King's garden is not the world, you foolish Squib," said a big Roman Candle; "the world is an enormous place, and it would take you three days to see it thoroughly."

"Any place you love is the world to you," exclaimed a pensive Catherine Wheel, who had been attached to an old deal box in early life, and prided

herself on her broken heart; "but love is not fashionable any more; the poets have killed it. They wrote so much about it that nobody believed them, and I am not surprised. True love suffers, and is silent. I remember myself once — But it is no matter now. Romance is a thing of the past."

"Nonsense!" said the Roman Candle, "Romance never dies. It is like the Moon, and lives forever. The bride and bridegroom, for instance, love each other very dearly. I heard all about them this morning from a brown-paper cartridge, who happened to be staying in the same drawer as myself, and knew the latest court news."

But the Catherine Wheel shook her head. "Romance is dead, Romance is dead, Romance is dead," she murmured. She was one of those people who think that, if you say the same thing over and over a great many times, it becomes true in the end.

Suddenly, a sharp, dry cough was heard, and they all looked round.

It came from a tall, supercilious-looking Rocket, who was tied to the end of a long stick. He always coughed before he made any observation, so as to attract attention.

"Ahem! ahem!" he said, and everybody listened except the poor Catherine Wheel, who was still shaking her head, and murmuring: "Romance is dead."

"Order! order!" cried out a Cracker. He was something of a politician, and had always taken a prominent part in the local elections, so he knew the proper parliamentary expressions to use.

"Quite dead," whispered the Catherine Wheel, and she went off to sleep.

As soon as there was perfect silence, the Rocket coughed a third time and began. He spoke with a very slow, distinct voice, as if he was dictating his memoirs, and always looked over the shoulder of the person to whom he was talking. In fact, he had a most distinguished manner.

"How fortunate it is for the King's son," he remarked, "that he is to be married on the very day on which I am to be let off. Really, if it had been arranged beforehand, it could not have turned out better for him; but princes are always lucky."

"Dear me!" said the little Squib, "I thought it was quite the other way, and that we were to be let off in the Prince's honour."

"It may be so with you," he answered; "indeed, I have no doubt that it is, but with me it is different. I am a very remarkable Rocket, and come of remarkable parents. My mother was the most celebrated Catherine Wheel of her day, and was renowned for her graceful dancing. When she made her great public appearance she spun around nineteen times before she went out, and each time that she did so she threw into the air seven pink stars. She was three feet and a half in diameter, and made of the very best gunpowder. My father was a Rocket like myself, and of French extraction. He flew so high that the people were afraid that he would never come down again. He did, though, for he was of a kindly disposition, and he made a most brilliant descent in a shower of golden rain. The newspapers wrote about his performance in very flattering terms. Indeed the Court Gazette called him a triumph of Pylotechnic art."

"Pyrotechnic, Pyrotechnic, you mean," said a Bengal Light; "I know it is Pyrotechnic, for I saw it written on my own canister."

"Well, I said Pylotechnic," answered the Rocket, in a severe tone of voice, and the Bengal Light felt so crushed that he began at once to bully the little Squibs, in order to show that he was still a person of some importance.

"I was saying," continued the Rocket, "I was saying— What was I saying?"

"You were talking about yourself," replied the Roman Candle.

"Of course; I knew I was discussing some interesting subject when I was so rudely interrupted. I hate rudeness and bad manners of every kind, for I am extremely sensitive. No one in the whole world is so sensitive as I am, I am quite sure of that."

"What is a sensitive person?" said the Cracker to the Roman Candle.

"A person who, because he has corns himself, always treads on other people's toes," answered the Roman Candle in a lower whisper; and the Cracker nearly exploded with laughter.

"Pray, what are you laughing at?" inquired the Rocket; "I am not laughing."

"I am laughing because I am happy," replied the Cracker.

"That is a very selfish reason," said

the Rocket angrily. "What right have you to be happy? You should be thinking about others. In fact, you should be thinking about me. I am always thinking about myself, and I expect everybody else to do the same. That is what is called sympathy. It is a beautiful virtue, and I possess it in a high degree. Suppose, for instance, anything happened to me to-night, what a misfortune that would be for everyone! The Prince and Princess would never be happy again, their whole married life would be spoiled; and as for the King, I know he would not get over it. Really, when I begin to reflect on the importance of my position, I am almost moved to tears."

"If you want to give pleasure to others," cried the Roman Candle, "you had better keep yourself dry."

"Certainly," exclaimed the Bengal Light, who was now in better spirits; "that is only common sense."

"Common sense, indeed!" said the Rocket indignantly; "you forget that I am very uncommon, and very remarkable. Why, anybody can have common sense, provided that they have no imagination. But I have imagination, for I never think of things as they really are; I always think of them as being quite different. As for keeping myself dry, there is evidently no one here who can at all appreciate an emotional nature. Fortunately for myself, I don't care. The only thing that sustains one through life is the consciousness of the immense inferiority of everybody else, and this is a feeling that I have always cultivated. But none of you have any hearts. Here you are laughing and making merry just as if the Prince and Princess had not just been married."

"Well, really," exclaimed a small Fire-balloon, "why not? It is a most joyful occasion, and when I soar up into the air I intend to tell the stars all about it. You will see them twinkle when I talk to them about the pretty bride."

"Ah! what a trivial view of life!" said the Rocket; "but it is only what I expected. There is nothing in you; you are hollow and empty. Why, perhaps the Prince and Princess may go to live in a country where there is a deep river, and perhaps they may have one only son, a little fair-haired boy with violet eyes like the Prince himself; and perhaps some day he may go out to walk with his nurse; and perhaps the nurse may go to sleep under a great elder-tree; and perhaps the little boy may fall into the deep river and be drowned. What a terrible misfortune! Poor people, to lose their only son! It is really too dreadful! I shall never get over it."

"But they have not lost their only son," said the Roman Candle; "no misfortune has happened to them at all."

"I never said that they had," replied the Rocket; "I said that they might. If they had lost their only son there would be no use in saying anything more about the matter. I hate people who cry over spilt milk. But when I think that they might lose their only son, I certainly am very much affected."

"You certainly are!" cried the Bengal Light. "In fact, you are the most affected person I ever met."

"You are the rudest person I ever met," said the Rocket, "and you cannot understand my friendship for the Prince."

"Why, you don't even know him," growled the Roman Candle.

"I never said I knew him," answered the Rocket. "I dare say that if I knew him I should not be his friend at all. It is a very dangerous thing to know one's friends."

"You had really better keep yourself dry," said the Fire-balloon. "That is the important thing."

"Very important for you, I have no doubt," answered the Rocket, "but I shall weep if I choose"; and he actually burst into real tears, which flowed down his stick like rain-drops, and nearly drowned two little beetles, who were just thinking of setting up house together, and were looking for a nice dry spot to live in.

"He must have a truly romantic nature," said the Catherine Wheel, "for he weeps when there is nothing at all to weep about"; and she heaved a deep sigh, and thought about the deal box.

But the Roman Candle and the Bengal Light were quite indignant, and kept saying: "Humbug! Humbug!" at the top of their voices. They were extremely practical, and whenever they objected to anything they called it humbug.

Then the moon rose like a wonderful silver shield; and the stars began to shine, and a sound of music came from the palace.

The Prince and Princess were leading

the dance. They danced so beautifully that the tall white lilies peeped in at the window and watched them, and the great red poppies nodded their heads and beat time.

Then ten o'clock struck, and then eleven, and then twelve, and at the last stroke of midnight everyone came out on the terrace, and the King sent for the Royal Pyrotechnist.

"Let the fireworks begin," said the King; and the Royal Pyrotechnist made a low bow, and marched down to the end of the garden. He had six attendants with him, each of whom carried a lighted torch at the end of a long pole.

It was certainly a magnificent display. Whizz! Whizz! went the Catherine Wheel, as she spun round and round. Boom! Boom! went the Roman Candle. Then the Squibs danced all over the place, and the Bengal Lights made everything look scarlet. "Good-bye," cried the Fire-balloon, as he soared away, dropping tiny blue sparks. Bang! Bang! answered the Crackers, who were enjoying themselves immensely. Every one was a great success except the Remarkable Rocket. He was so damp with crying that he could not go off at all. The best thing in him was the gunpowder, and that was so wet with tears that he was of no use. All his poor relations, to whom he would never speak, except with a sneer, shot up into the sky like wonderful golden flowers with blossoms of fire. Huzza! huzza! cried the court; and the little Princess laughed with pleasure.

"I suppose they are reserving me for some grand occasion," said the Rocket; "no doubt that is what it means," and he looked more supercilious than ever.

The next day the workmen came to put everything tidy. "This is evidently a deputation," said the Rocket; "I will receive them with becoming dignity"; so he put his nose in the air, and began to frown severely as if he were thinking about some very important subject. But they took no notice of him at all till they were just going away. Then one of them caught sight of him. "Hallo!" he cried, "what a bad rocket!" and he threw him over the wall into the ditch.

"*Bad* Rocket? *Bad* Rocket?" he said, as he whirled through the air; "impossible! *Grand* Rocket, that is what the man said. *Bad* and *Grand* sound very much the same, indeed they often are the same"; and he fell into the mud.

"It is not very comfortable here," he remarked, "but no doubt it is some fashionable watering-place, and they have sent me away to recruit my health. My nerves are certainly very much shattered, and I require rest."

Then a little Frog with bright jeweled eyes, and a green mottled coat, swam up to him.

"A new arrival, I see!" said the Frog. "Well, after all there is nothing like mud. Give me rainy weather and a ditch, and I am quite happy. Do you think it will be a wet afternoon? I am sure I hope so, but the sky is quite blue and cloudless. What a pity!"

"Ahem! ahem!" said the Rocket, and he began to cough.

"What a delightful voice you have!" cried the Frog. "Really it is quite like a croak, and croaking is of course the most musical sound in the world. You will hear our glee-club this evening. We sit in the old duck-pond close by the farmer's house, and as soon as the moon rises we begin. It is so entrancing that everybody lies awake to listen to us. In fact, it was only yesterday that I heard the farmer's wife say to her mother that she could not get a wink of sleep at night on account of us. It is most gratifying to find oneself so popular."

"Ahem! ahem!" said the Rocket angrily. He was very much annoyed that he could not get a word in.

"A delightful voice, certainly," continued the Frog; "I hope you will come over to the duck-pond. I am off to look for my daughters. I have six beautiful daughters, and I am so afraid the Pike may meet them. He is a perfect monster, and would have no hesitation in breakfasting off them. Well, good-bye: I have enjoyed our conversation very much I assure you."

"Conversation, indeed!" said the Rocket. "You have talked the whole time yourself. That is not conversation."

"Somebody must listen," answered the Frog, "and I like to do all the talking myself. It saves time, and prevents arguments."

"But I like arguments," said the Rocket.

"I hope not," said the Frog complacently. "Arguments are extremely vul-

gar, for everybody in good society holds exactly the same opinions. Good-bye a second time; I see my daughters in the distance"; and the little Frog swam away.

"You are a very irritating person," said the Rocket, "and very ill-bred. I hate people who talk about themselves, as you do, when one wants to talk about oneself, as I do. It is what I call selfishness, and selfishness is a most detestable thing, especially to anyone of my temperament, for I am well known for my sympathetic nature. In fact, you should take example by me; you could not possibly have a better model. Now that you have the chance you had better avail yourself of it, for I am going back to court almost immediately. I am a great favourite at court; in fact, the Prince and Princess were married yesterday in my honour. Of course you know nothing of these matters, for you are a provincial."

"There is no good talking to him," said a Dragon-fly, who was sitting on the top of a large brown bulrush; "no good at all, for he has gone away."

"Well, that is his loss, not mine," answered the Rocket. "I am not going to stop talking to him merely because he pays no attention. I like hearing myself talk. It is one of my greatest pleasures. I often have long conversations all by myself, and I am so clever that sometimes I don't understand a single word of what I am saying."

"Then you should certainly lecture on Philosophy," said the Dragon-fly; and he spread a pair of lovely gauze wings and soared away into the sky.

"How very silly of him not to stay here!" said the Rocket. "I am sure that he has not often got such a chance of improving his mind. However, I don't care a bit. Genius like mine is sure to be appreciated some day"; and he sank down a little deeper into the mud.

After some time a large White Duck swam up to him. She had yellow legs, and webbed feet, and was considered a great beauty on account of her waddle.

"Quack, quack, quack," she said. "What a curious shape you are! May I ask were you born like that, or is it the result of an accident?"

"It is quite evident that you have always lived in the country," answered the Rocket, "otherwise you would know who I am. However, I excuse your ignorance. It would be unfair to expect other people to be as remarkable as oneself. You will no doubt be surprised to hear that I can fly up into the sky, and come down in a shower of golden rain."

"I don't think much of that," said the Duck, "as I cannot see what use it is to anyone. Now, if you could plow the fields like the ox, or draw a cart like the horse, or look after the sheep like the collie-dog, that would be something."

"My good creature," cried the Rocket in a very haughty tone of voice, "I see that you belong to the lower orders. A person of my position is never useful. We have certain accomplishments, and that is more than sufficient. I have no sympathy myself with industry of any kind, least of all with such industries as you seem to recommend. Indeed, I have always been of the opinion that hard work is simply the refuge of people who have nothing whatever to do."

"Well, well," said the Duck, who was of a very peaceable disposition, and never quarreled with anyone, "everybody has different tastes. I hope, at any rate, that you are going to take up your residence here."

"Oh! dear, no!" cried the Rocket. "I am merely a visitor, a distinguished visitor. The fact is that I find this place rather tedious. There is neither society here, nor solitude. In fact, it is essentially suburban. I shall probably go back to court, for I know that I am destined to make a sensation in the world."

"I had thoughts of entering public life once myself," remarked the Duck; "there are so many things that need reforming. Indeed, I took the chair at a meeting some time ago, and we passed resolutions condemning everything that we did not like. However, they did not seem to have much effect. Now I go in for domesticity, and look after my family."

"I am made for public life," said the Rocket, "and so are all my relations, even the humblest of them. Whenever we appear we excite great attention. I have not actually appeared myself, but when I do so it will be a magnificent sight. As for domesticity, it ages one rapidly, and distracts one's mind from higher things."

"Ah! the higher things of life, how fine they are!" said the Duck; "and that reminds me how hungry I feel"; and she swam away down the stream, saying: "Quack, quack, quack."

"Come back! come back!" screamed the Rocket, "I have a great deal to say to you"; but the Duck paid no attention to him.

"I am glad that she has gone," he said to himself, "she has a decidedly middle-class mind"; and he sank a little deeper still into the mud, and began to think about the loneliness of genius, when suddenly two little boys in white smocks came running down the bank, with a kettle and some faggots.

"This must be the deputation," said the Rocket, and he tried to look very dignified.

"Hallo!" cried one of the boys, "look at this old stick! I wonder how it came here"; and he picked the Rocket out of the ditch.

"*Old* Stick!" said the Rocket, "impossible! *Gold* Stick, that is what he said. Gold Stick is very complimentary. In fact, he mistakes me for one of the court dignitaries."

"Let us put it into the fire!" said the other boy, "it will help to boil the kettle."

So they piled the faggots together, and put the Rocket on top, and lit the fire.

"This is magnificent," cried the Rocket; "they are going to set me off in broad daylight, so that everyone can see me."

"We will go to sleep now," they said, "and when we wake up the kettle will be boiled"; and they lay down on the grass, and shut their eyes.

The Rocket was very damp, so he took a long time to burn. At last, however, the fire caught him.

"Now I am going off!" he cried, and he made himself very stiff and straight. "I know I shall go much higher than the stars, much higher than the moon, much higher than the sun. In fact, I shall go so high that—"

Fizz! Fizz! Fizz! and he went straight up into the air.

"Delightful!" he cried, "I shall go on like this forever. What a success I am!"

But nobody saw him.

Then he began to feel a curious tingling sensation all over him.

"Now I am going to explode," he cried. "I shall set the whole world on fire, and make such a noise that nobody will talk about anything else for a whole year." And he certainly did explode. Bang! Bang! Bang! went the gunpowder. There was no doubt about it.

But nobody heard him, not even the two little boys, for they were sound asleep.

Then all that was left of him was the stick, and this fell down on the back of a Goose, who was taking a walk by the side of the ditch.

"Good heavens!" cried the Goose. "It is going to rain sticks"; and she rushed into the water.

"I knew I should create a great sensation," gasped the Rocket, and he went out.

SIR WALTER SCOTT AND SOME OF HIS PETS

ONE of the many winsome characteristics of Sir Walter Scott was his love for animals, especially for horses and dogs, and he was never without their intimate companionship. His horses liked their food from no other hand than his. It is told how one of his favorites named Brown Adam, as soon as the stable door was opened, would trot briskly to the leaping-stone, where he would remain standing motionless and silent until his master appeared and was fairly seated on his back. Then such neighings of joy, as he frolicked off carrying his beloved master over the hard roads, with two wondrous greyhounds bounding behind!

No matter how busily he was writing in his beautiful study at Abbotsford, there must always be a dog stretched on his hearth, pretending to be asleep, but always with a slit of at least one eye open upon his master.

The dog Sir Walter loved best must have been Camp, for many years a faithful companion on hill and hearth. When he died Sir Walter's heart was broken. His daughter said she well remembered the burying of Camp. It was of a night. The whole family filed out in tears about the grave. The old gardener had dug a grave where Camp was put. Such tears! And she adds: "My father smoothed the turf over Camp with the saddest face I have ever seen."

He had an engagement to dine that night, but would not go. He sent a note saying he could not come on account of the death of a dear old friend.

THE NEXT STORIES ARE ON PAGE 5323.

MONUMENTS TO TWO FAMOUS WOMEN

The name of Mary Lyon is inseparably connected with the higher education of women. She was the founder of Mount Holyoke Seminary, now Mount Holyoke College. Mary Lyon Hall occupies the site of the original building, and contains the chapel and administrative offices. Photo, Ewing Galloway.

Everyone who knows anything of Christian Science has heard of the Mother Church in Boston. To the right is the original building. It is now overshadowed by the new edifice, in which there is an auditorium with five thousand seats. This picture of Mrs. Eddy is much liked. Photo, George Brayton.

WHAT THIS STORY TELLS US

IN these days women may be doctors, lawyers, artists, architects, or may engage in any other profession or occupation that they choose. Women may hold property in their own names, and may travel alone and unattended without fear. It was not always so, and this story tells us something about the lives of a few of the leaders who fought for the freedom of action that women now enjoy, and the hardships and unkindness they had to face in doing it. We read here of women who cared for the sick and dying in time of war, of the first woman doctor in the United States, of a woman who founded a church, and of a girl who, in spite of the fact that she was blind and deaf, went to college, and learned the things that girls who have all their powers sometimes find it hard to do. We feel proud of this girl, and her example sometimes helps us to be cheerful when we feel our tasks are hard.

WOMEN IN THE UNITED STATES

IN our time there is no study which a woman may not undertake, and there are few occupations in which she may not engage. In most civilized countries the laws which did not allow married women to keep their own property, or to have any right to their own earnings, or to be guardians of their children, and other laws which treated women as if they were children, have been repealed.

This state of affairs would have seemed not only very strange but very wicked to our forefathers. When the first settlers came over from England they did not change their beliefs and opinions, and one of their most deeply rooted convictions was that women were inferior in all ways to men. Women did the work of the household. They cooked and baked and washed. They were the spinners and weavers and dyers of the community. They made clothes for their families from cloth of their own weaving. They cared for the poultry, brought the cows from the pasture, milked them and made the butter and cheese, and too often they were literally the hewers of wood and drawers of water.

Of course, if their husbands were rich they had slaves or servants to do these things, but the general belief was that women and girls needed plenty to do to keep them out of mischief. Both men and women, however, thought that a woman should never be heard of outside of her own home. The idea that woman might enter a profession or adopt an artistic career would have shocked them deeply.

Nevertheless, there were some notable women in early times, and at least one—Anne Hutchinson—is famous.

Anne Hutchinson was born in England about the year 1590. She and her husband, John Hutchinson, were great admirers of the Reverend John Cotton, and when he came to this country they followed him. They settled in Boston, where Mrs. Hutchinson gained great influence. She began to give religious teaching herself, and won the support of John Cotton and the governor. The clergy of the colony, however, did not like the idea of allowing a woman to teach and preach. Mrs. Hutchinson's views did not meet with their approval, and fearing that she might lead some of the people astray, they held a convention before which she was tried for heresy. She was condemned and sentenced to banishment from Massachusetts. Unless she went back to England, she had nowhere to go except to the wilderness.

She chose the wilderness, and with her family and friends journeyed to Rhode Island, where Roger Williams had already started a little colony. The Hutchinsons made a new settlement; but after her husband's death Mrs. Hutchinson moved to the shore of Long Island Sound, near what is now New Rochelle, New York. There she and all her family, except one daughter, were murdered by the Indians. When the stern Puritans of Massachusetts heard of the tragedy they said it was a manifestation of divine Providence.

Anne Hutchinson had an extraordinarily clever mind; but in the age in which she lived she was not able to make full use of its powers. It is probable there were other clever women in the colonies in her day, but none of them did anything of sufficient public importance to claim mention. Of some of the famous women of Revolutionary times—Martha Washington, Abigail Adams and Dolly Madison—we may read in the chapter beginning on page 391.

Until a number of years after the Revolution it was not thought necessary that girls should have much education. They were taught reading and writing, a little arithmetic, a smattering of geography and grammar, and, generally, very little spelling. If their fathers could afford it, they probably went to a "young ladies' finishing school." There they learned a little French and drawing and perhaps were taught to sing a few songs and to play a few tunes on the harpsichord or piano. A girl learned, of course, to do exquisite sewing, and spent long hours over her embroidery frame, but if by chance she learned Latin and Greek with her brothers, she was termed a blue-stocking, and men and women alike fled from her company. There was nothing even approaching a high school for girls until Emma C. Willard opened a school at Troy.

EMMA WILLARD A PIONEER OF EDUCATION FOR GIRLS

Emma C. Willard, whose maiden name was Hart, was born about ten years after the Revolution, in Berlin, Connecticut. She was a clever girl and learned quickly. When she was sixteen she became a teacher in the village school, and before she was twenty was principal of an academy for girls in Middlebury, Vermont. In a few years she married Dr. James Willard of the same town, but did not give up her work.

In the year of her marriage, she opened a boarding-school for girls, into which she introduced more thorough methods of teaching. In 1821 she opened a seminary for girls at Waterford, New York, for which she received state aid. Her ideas gained ground, and in time she won the approval of such men as Governor Clinton of New York, who supported her by his influence. The school, which from the first was successful, was moved to Troy, New York, and as the Emma Willard School it is still well known.

Mrs. Willard wrote geography and history for schools, an account of a tour in Europe, and some poems, of which the best known is the song Rocked in the Cradle of the Deep. She is best remembered, however, for her work in the education of girls, in which she was so much interested that she helped to found a school for Greek girls in the ancient city of Athens. Greece, you remember, gained independence of Turkish rule in the first half of the nineteenth century. Mrs. Willard died in 1870, and some years later the city of Troy erected a statue in her memory.

THE WOMEN WHO BEGAN THE FIGHT FOR WOMAN SUFFRAGE

Lucretia Mott and Elizabeth Cady Stanton are remembered as the women who made a little ball of the question of woman suffrage and set it rolling to catch public opinion. Lucretia Mott died before women were allowed to vote in any country, but Elizabeth Cady Stanton lived to see suffrage given to women in New Zealand and the Commonwealth of Australia.

Lucretia Mott, whose maiden name was Coffin, was born in 1793 on Nantucket Island. She was educated at a good school near Poughkeepsie, New York, which had been established by the Society of Friends, who from the first had been interested in the education of girls, and she later on became a preacher in the Society. In 1818 she married James Mott, who was a strong supporter of the movement for the abolition of slavery which even then had begun to gain ground. Mrs. Mott's interest was aroused. She joined her husband in his work, and much to the dissatisfaction of some of the members of her own denomination, she became prominent in the movement.

In 1840 she and her husband were sent as delegates to an anti-slavery convention

in London, but she was not allowed to take any part in the meetings, as it was declared that all women should be excluded. With the gentle indignation of a Quaker she discussed her exclusion from the meetings with her friend Elizabeth Cady Stanton. That led to the opening-up of the whole question of woman's rights. The result was the first woman's rights convention, which was held at Seneca Falls, New York, in 1826. From that convention grew the wide movement through which women have gained the right to vote in most of the civilized nations of the world.

Mrs. Mott worked hard for woman suffrage almost to the end of her life, which closed in 1880, when she had almost reached the age of ninety. Her friend Elizabeth Cady Stanton, who was a much younger woman, outlived her by many years.

MRS. STANTON, WHO CARRIED ON THE WORK OF MRS. MOTT

Elizabeth Cady Stanton was the daughter of a lawyer named Daniel Cady, who was a member of the House of Representatives when his little daughter was born in 1815. She first went to school in her native town of Johnstown, New York, but later on went to Troy to the school which had been founded by Emma Willard. When she was about twenty-five she married a lawyer, Henry Brewster Stanton, who was a prominent abolitionist.

On their wedding trip the young people went to London, and there Mrs. Stanton met Lucretia Mott. In her indignation at her friend's dismissal from the anti-slavery meetings she became very much interested in the question of woman's rights, and afterward assisted Mrs. Mott in calling and holding the first woman's rights convention, at which the National Woman's Suffrage Association was formed. Mrs. Stanton was made president of the association, and held this position for many years. She was instrumental in having a law passed in the New York legislature which gave married women the right to hold property in their own names. Up to the time that this law was passed, when a woman married, if she had a house or land of her own in New York State, it became her husband's property unless it was put in the name of trustees.

Mrs. Stanton lived until the year 1902, and throughout her long life did much for the cause of woman suffrage. With Susan B. Anthony, another famous woman suffragist, she wrote a History of Woman Suffrage. These three women were the first leaders of the little band who braved jeers and ridicule to win the freedom that women enjoy. The women who began it had a long, hard fight. It took courage of a rare kind to face, as they did, ridicule, and often the brutal abuse of a laughing, jeering world, to endure isolation, and to bear the pain of broken friendships.

A WOMAN FOUNDER OF A CHURCH

From early times, and in many countries, women have been active in religion, but it remained for an American woman, Mary Baker Eddy, to found a new faith. Her father, Mark Baker, who was descended from one of the earliest settlers, had a farm near Concord, New Hampshire, and there all his children were born. Mary Baker, who was the youngest of the family, was born in 1821. She was a beautiful child, but nervous and very delicate, and had to be taken from school at an early age because of her health. She was studious, however, and learned a good deal at home, especially, it is said, from a favorite brother, who was a student at Dartmouth College and who afterward became a promising lawyer. The death of this brother at an early age was a great grief to the sensitive child. Later on her father gave up his farm and moved to a neighboring village, where she went to another and better school for some time.

In her early womanhood she married George W. Glover, a friend of one of her brothers, and with her husband went to live in Charleston, South Carolina, where he carried on his business. Her happiness was quickly ended. Within a year her husband died, and she went back to live with her parents. Her health had never been good, and after her husband's death she was for many years an invalid. She was unable to care for her little son, who was brought up by friends. They took him with them to the West, and she saw little of him, either in his childhood or after he had grown to manhood.

In her hours of enforced quiet she pondered much on the problems and mysteries of life. After years of thought she discovered the religion which she called Christian Science, and which she afterward embodied in a book called Science and Health with Key to the Scriptures. Having gained the health which had been

denied all her life, she began to teach others, because she felt that she had learned something that all should know. She published her book in 1875, and shortly afterward was married to one of her students, Asa Gilbert Eddy, by whose name she is best known.

A little later Mrs. Eddy founded the church known as the First Church of Christ, Scientist, in Boston. From this beautiful "Mother Church" have grown many branch churches, and the believers in the faith that she founded are to be found in great numbers in many countries. After a few years she was again widowed. In 1908 she left her home in Concord, and bought a cheerful graystone mansion in Chestnut Hill, Massachusetts, where she lived until she passed on in 1910.

THE BEGINNING OF HIGHER EDUCATION OF WOMEN

The first famous teacher after Emma Willard is Mary Lyon, who was born on a farm near Buckland, Massachusetts, when Emma Willard was about ten years old. She began to teach in a little red schoolhouse when she was only seventeen years old. She stayed there for three years and then went back to school to learn more. Thus she went on, sometimes teaching and sometimes studying, until she had learned all that was taught to girls in her time. Then she determined to found a school where girls who were not well off could go and study without having to stop, for months or years at a time, to earn money, as she had had to do. Friends came to her assistance, and Mount Holyoke Seminary, the first institution for the higher education of women in America, was opened in 1837.

It was poor at first. Mary Lyon as principal drew a salary of only $200 a year, and for many years the students did most of the household work of the school themselves. This did not hinder them from studying well. The fame of the school increased, and in 1888 it became Mount Holyoke College. Mary Lyon died in 1849 and was buried in the grounds of the school which she had made the pioneer of all the colleges for women that have since come into existence in the United States.

WOMEN WHO DID WORK FOR THE RED CROSS

Two women who became famous at the time of the Civil War were Mary Livermore and Clara Barton. They were both born in the year 1821, in Massachusetts. Both of these great women commenced life as teachers, and both engaged in the relief of the soldiers during the Civil War.

Mary Livermore was born in Boston and was well educated in that city. After some years of teaching she married a fine public-spirited clergyman, and worked with him in various societies which were trying to abolish slavery.

When the Civil War broke out, she became a member of the United States Sanitary Commission, which did the type of work now accomplished by the Red Cross, and the Young Men's Christian Association and similar welfare agencies. She organized women's aid societies for securing food, bandages and other supplies for the soldiers. Her work, in alleviating some of the suffering due to war, was important and far-reaching.

She was an earnest temperance worker and a woman suffragist, and lectured and wrote extensively on these two subjects.

When the Civil War broke out, Clara Barton, who had had to give up teaching because of ill-health, and take a clerical position, gave up her work to go into the hospitals and nurse the wounded soldiers. She came in contact with many sorrowing mothers, fathers and wives who were searching among the wounded for their loved ones, often searching in vain. After the war she set up an agency for finding missing soldiers, living and dead, and thousands of grateful hearts blessed her because through her they were able to find the place where their soldier heroes lay at rest.

During the Franco-Prussian War she joined the Red Cross and labored for the wounded and the needy. The rest of her life she spent in the service of the Red Cross which she founded in the United States. Through her influence, the constitution of the society was so changed that it can go to the aid of sufferers from any great calamity, as well as to function in time of war. She lived to the age of ninety-one, dying in 1912.

THE FIRST WOMAN DOCTOR IN THE UNITED STATES

In the days of our great-grandmothers, women often had skill as nurses, and a certain knowledge of simple medicines so that they could care for the members of their own households, in minor illnesses. But there was never a thought that a

woman might study medicine. Such an idea would have been thought preposterous. No college would have opened its doors to such a woman. It took a great deal of courage to sustain the first women students through the abuse and ridicule with which they were greeted when they first attempted to break into a field of study which was thought too difficult for women's intelligence. This courage was possessed in high degree by Elizabeth Blackwell, the first woman doctor in the United States.

Elizabeth Blackwell was born in Bristol, England, in 1821, and was brought to the United States when she was eleven years old. After her school years she became a teacher, but soon realized that her true vocation was in medicine. She was refused admission to a medical school in Philadelphia, but two physicians allowed her to study with them, and in 1847, after many difficulties had been overcome, she entered the Medical College at Geneva, New York. After graduating with high honors, she studied in hospitals in Paris and London. In Paris the hospitals at first refused to admit her unless she wore men's clothing. This she refused to do, and her quiet persistence won the day. She practiced successfully in New York and London, where she died in 1910.

THE WOMAN WHO LED A TEMPERANCE MOVEMENT

Wherever there has been organized a Woman's Christian Temperance Union there is known the name of Frances Elizabeth Willard, educator and reformer. Miss Willard was born at Churchville, New York, in 1839. She graduated at the Northwestern Female College at Evanston, Illinois. After graduation and some years of travel in Europe and the East she became Dean of the Women's College at her old university. It was, however, her connection with the temperance movement that made Miss Willard famous. Under her leadership the women of the United States took a strong stand against liquor and saloons. In 1883 Miss Willard founded the World's Woman's Christian Temperance Union. She wrote several books and pamphlets as well as articles for magazines. She died in 1898.

THE FIRST WOMAN WHO BECAME A SUPERINTENDENT OF SCHOOLS

Women now hold so many offices in public life that it is a little strange to remember that the first woman school superintendent in a great city was appointed no longer ago than 1910. This was Ella Flagg Young, who was born in 1845. Most of her life was spent in Chicago, where she went to high school and normal school, then taught, rising to be principal, then district superintendent, finally, Superintendent of Schools. She died in 1918.

A GIRL WHO WITHOUT SIGHT OR HEARING LEARNED TO SPEAK

The next famous woman of whom we shall speak is known all over the world for the difficulties she has overcome in learning to do the things which children who have all their senses can be taught with ease.

To children who can play and sing, who who can run about and see the beautiful trees and flowers, the faces of father and mother and loving friends, who can look up at the blue sky, and hear the birds sing, the tragedy of being blind or deaf or dumb seems a calamity that can scarcely be comprehended. And yet some children can neither hear nor speak, some children cannot see, and a few can neither see nor hear nor speak.

Helen Keller was shut up in such a prison. Until she was two years old she was like any other healthy, happy baby, and then a dreadful fever came and burned away her sight and hearing. The remembrance of the words she had learned fell away, and she could not speak. Soon she became strong and well again; but with what a difference! The once bright happy child was closed around by a wall of silence, and as she grew older her efforts to express herself often ended in wild, uncontrollable bursts of passion.

Her parents heard of the wonderful work that had been done at the Perkins Institute in Boston for another child who was afflicted in the same way as their little daughter. They sent there for a teacher, and Miss Anne Sullivan came to be teacher, playmate and friend to poor little Helen. How the child was taught to read and write and spell is too long a story to tell here.

When she was ten years old she learned to speak by feeling the vibrations of her teacher's throat. She learned several languages and mathematics. With Miss Sullivan as companion, she went to school, and, in spite of all the obstacles in her path, was ready for college in her twenty-first year. She chose to enter Radcliffe

College, and took her degree there. She has written several books, and takes an active, happy interest in all that happens in the world.

THE FIRST WOMAN ELECTED TO THE HOUSE OF REPRESENTATIVES

Probably the pioneers in the woman-suffrage movement scarcely hoped that women would be allowed to sit in Congress before generations had passed. Yet their work was so well done that in 1916, within a few years of the death of Elizabeth Cady Stanton, Miss Jeanette Rankin was elected to the House of Representatives from the state of Montana, and took her seat without opposition. Several women have been elected since to the House, and one to the Senate. Ruth Bryan Owen, formerly a member of Congress, was appointed Minister to Denmark in 1933.

The first woman to become a member of a President's Cabinet is Frances Perkins, whom President Franklin D. Roosevelt appointed Secretary of Labor in 1933. Miss Perkins was born in Boston in 1882. She was graduated from Mount Holyoke College and later studied at several large universities. She taught for a while, then, in 1907, entered welfare work, which she has never left. She occupied several government offices in New York State, finally becoming head of the State Labor Department, so that her appointment to the Cabinet was the logical next step.

TWELVE NOTABLE WOMEN OF OUR TIMES

In the year 1930 the American National League of Women Voters chose the twelve greatest living American women, each one being outstanding in her chosen work. The names were Jane Addams, Cecelia Beaux, Annie Jump Cannon, Carrie Chapman Catt, Anna Botsford Comstock, Minnie Maddern Fiske, Louise Homer, Julia Lathrop, Florence Rena Sabin, Martha Carey Thomas, Martha Van Rensselaer, Edith Wharton and Martha Berry. Some have since died.

The important thing to note here is the wide variety of work they represent. Jane Addams is a social reformer who inaugurated in 1889 in Chicago the famous Hull House, a new kind of settlement house which has been a model for practical social centres in many other large cities. Miss Addams' work with the poor was an inspiration to thousands of other women. In 1931 she shared with Nicholas Murray Butler the Nobel Prize for Peace. She died in 1935.

Cecelia Beaux is a painter. We tell of her work on page 3455. Annie Jump Cannon is a distinguished astronomer, who has made important contributions to the knowledge of her subject and has received signal honors, in this country and abroad. Carrie Chapman Catt accomplished, perhaps, more than any other one person in securing the passage of the Nineteenth Amendment to the Constitution, which gave the vote to women.

Anna Botsford Comstock is an authority in natural history. Minnie Maddern Fiske was a talented actress, raising the art of dramatic acting in America to a high plane. Louise Homer has been accounted one of the world's great singers.

Julia Clifford Lathrop was the first chief of the Children's Bureau in Washington, a government office created in 1912 to study the special needs of the nation's children. In 1921 Miss Grace Abbott became director of the Children's Bureau and she, too, did important work.

Florence Rena Sabin is a noted authority in anatomy, a member of the Rockefeller Institute. Martha Carey Thomas was for many years president of Bryn Mawr College.

Martha Van Rensselaer brought the science of home economics to full stature, and for many years directed its teaching at Cornell University. The place of Edith Wharton, novelist, in American literature, is told on page 5009. Martha Berry is a philanthropist who has done much for the poor mountain children of the South. We tell of Amelia Earhart, another important American woman, on page 178.

WOMEN NOW ENGAGE IN EVERY OCCUPATION

There are many other noted women who have done, and are doing, good work for their country and for the world. But in this story we have space only for a few. We have placed greatest emphasis upon the pioneers, the women who, oftentimes with much suffering of spirit, broke the way for other women.

The World War had a great part in opening up to women many fields of employment. The last Census gave 10,752,116 women gainfully employed and it is safe to say that no avenue of employment is closed to women to-day.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5273.

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